'Tools for Profits' . . . Pg. 42

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Chicago '59 Sales . . . . Pg. 8

AIR CONDITIONING HEATING & REFRIGERATION NEWS
The Newspaper of the Industry
RESIDENTIAL — COMMERCIAL — INDUSTRIAL
February 1, 1960

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1960 Can Be Air Conditioning's 'Big Year' For Sales, Profits, and Progress

Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Sad Story of Auto Air Conditioning
Science Conquers All?
Sane Balance
Progress? or Peace?
Einstein and Weiner
Philosophy vs. TV Ratings

Sad Story of Auto Air Conditioning

Anybody who has been enthralled by the late Bill Power on-a-platform will agree that he probably was the finest public speaker of our generation.

Red Motley, Billy Graham, "What's-His-Theme?" McFarland . . . none of them . . . grand as they are . . . could carry Bill Power's glove.

This accolade constitutes a Preface to a true story. It was told by Bill Power at a luncheon recently, when he formally retired as Chevrolet's Advertising Manager—just a few days before he passed on.

"It was Saturday afternoon in a Chevrolet dealership," brother Power sonored. "Everybody had gone home except one still-laboring grease monkey.

"The phone rang and rang and rang. Grudgingly the alone mechanic finally crawled out, and answered:

" 'Hello?'

"Whereupon a customer berated him because his auto air conditioner was on the blink, and what was Mr. Chevrolet going to do about it?

" 'Sir,' responded the mechanic, 'when I said HELLO I told you all I know about air conditioning.' "

Science Conquers All?

When Sputnik went up, "culture" lost out in the U.S.A. for awhile. All of a sudden there was an urgent demand for mathematicians and scientists . . . MORE, *more*, . . . more . . . and not much emphasis on anything else . . . in our hour of fright.

School curricula supervisors, all over these United States, were challenged to meet Communist—rather than rational—standards.

Godless Russkie "education" centers on monistic Math and Science, of course, rather than on human values.

(Continued on Page 35, Col. 1)

Air Conditioning Tops In Consumer Preference

Air conditioning was far ahead of any other type of probable purchase in percentage of gain in consumer buying plans in a survey conducted by *Newsweek* magazine late last year.

Comparing current buying plans with those of a year ago (in percentage change) air conditioners were up 31% in consumer preference, with used automobiles being next highest with 16%. Other items: vacations abroad, up 14%; new cars, up 8%; new houses, down 4%; TV sets, down 6%; furniture, down 4%; ranges, down 16%; dishwashers, up 10%.

Welbilt Unit Announces Marketing Policy

FARMINGDALE, N. J.—Welbilt Air Conditioning & Heating Corp., newly-formed subsidiary of Welbilt Corp., is announcing its policy for marketing central air conditioning and heating equipment.

As previously reported in the

(Concluded on Page 4, Col. 4)

Market Analysts See Sales Gains of 10 to 25%; Prices Seem Fairly Stable, Profits on Upgrade

Advances In Units For Homes Debut At Builders' Show

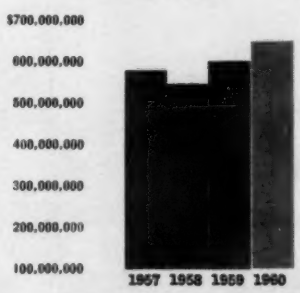
By C. Dale Mericle

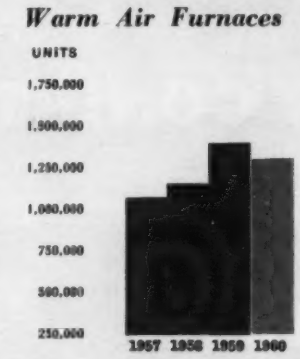
CHICAGO — As a discussion topic air conditioning has not been on the program of a National Association of Home Builders convention for some time, but at the group's 16th annual meeting and exposition here there was, perhaps more importantly, considerable talk on the subject between builders and manufacturers in the exhibit booth and "hospitality" suites.

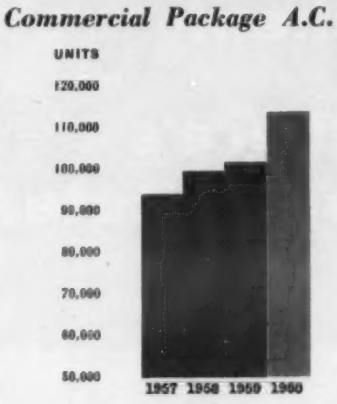
This revived and increased interest proved gratifying to the industry representatives even though they question whether it represents a genuine breakthrough in the market. More likely, the exhibitors think, it's simply a logical reaction to last year's hot summer.

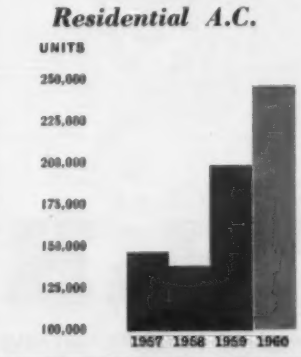
Heat pumps attracted con-

(Concluded on Page 53, Col. 3)









GRAPHS showing room air conditioner and auto air conditioner sales are on page 4.

DALLAS—This could be the year! That sums up the high hopes and expectations for 1960 air conditioning sales of many who have "seen it through" some of the lean and trying years, as they assemble here to look over the industry's new products at the 2nd Southwest Heating & Air Conditioning Exposition which runs from Feb. 1 through Feb. 4 at the Memorial Auditorium here.

The success of the industry—and particularly of those who sell and install air conditioning products—depend on the following principal factors. **The Market. Prices. Profits. Problems.** An analysis of the consensus of industry thinking, both at the factory and field level, turns up the following thinking on these factors.

1. The Market

Even the most conservative of the thoughtful market analysts are optimistic. The charts on this page indicate the trend of

(Concluded on Page 4, Col. 2)

Cincinnati Residential Cooling Sales Hit High

CINCINNATI — Rebounding from a disappointing season the year before, sales of residential air conditioning here set a new record in 1959.

Central home cooling installations numbered approximately 1,250 in 1959, the NEWS estimates following its sixth annual survey of Cincinnati contractors and distributors.

Sales in 1958 were estimated at about 700, a sharp drop from the previous record of 1,137 counted in 1957.

Weather was probably the chief agent responsible for both the record-breaking sales in 1959 and the disappointing results in 1958. The summer of 1958 was chilly, but '59 was a hot one. General business conditions may have played a minor role, also, however, because things did look much brighter in 1959 than they did in 1958.

Most contractors here think 1960 will be even better for residential air conditioning, provided the weather cooperates.

In making its 1959 survey the NEWS obtained data from the

(Continued on Page 26, Col. 1)

BEHIND PAGE ONE . . .

COMMERCIAL Air Conditioning
'New Concept' Uses Structure's Framework In Place of Conventional Piping, Ductwork 44
Heat Pump In Motor Hotel Cools Air, Warms Swimming Pool 45

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Electric Heating To Be Topic at Electrical Engineers Meeting Feb. 1-5

NEW YORK CITY—A symposium on electric space heating and heat pumps has been scheduled for the winter general meeting of the American Institute of Electrical Engineers Feb. 1-5 at the Statler-Hilton (meeting headquarters) and Sheraton-Atlantic hotels here.

The symposium will be held Wednesday afternoon, Feb. 3. Speakers and their topics are:

"A Statistical Method for Determining Heat Losses In Electrically Heated Residences," E. E. Linden, The Narragansett Electric Co.; "Heat Storage as Applied to Residential Heat Pumps," J. A. Eibling, Battelle Memorial Institute; "Economics of Heat Pumps," M. J. Wilson, Carrier Corp.; "Calculating the Electric Heating Load," W. R. New, Tennessee Valley Authority.

One of the presentations to be delivered Tuesday afternoon, Feb. 2, will include results of air conditioning in the 50 new cars of the Hudson & Manhattan Railway. Also on the program is a session on thermoelectricity Thursday afternoon.

Looking for a Business to Buy . . . ?
Check the Business Opportunities Section in the classified advertising columns.

Now Producing In 3 Locations

Recold Commences Manufacturing At New Columbus, Ohio Facilities

LOS ANGELES—As a result of the "unprecedented success" of its eastern warehousing activities, Recold Corp. has begun manufacturing operations at new facilities in Columbus, Ohio, the firm announced.

The products fabricated by this new plant, which was opened on Jan. 15, will be supplied to the entire Eastern Seaboard, as well as some midwestern states.

"The plant, located at 840 Kinnear Rd. (HUdson 6-0601), will be equipped to fabricate much of Recold's line of air conditioning and refrigeration products," it was stated. "The Eastern warehousing facilities, opened two years ago, have also been moved to this new location, and will stock Recold's most popular products lines at all times.

"Recold distributors will now be able to speed deliveries, offering one-day service to a large part of the East Coast."

With the opening of the new eastern plant, Recold is now engaged in manufacturing operations at three locations: Los Angeles; Durango, Mexico; and Columbus. Construction will soon begin on a 50,000-sq. ft. addition to Recold's Los Angeles plant.

This over-all expansion program will mean that Recold's production capacity will be more than doubled during 1960, the company said.

Buffalo Law May Prevent Contractor Licensing by Civil Service Group

BUFFALO — Corporation Counsel Anthony Manguso said a provision of the General City Law would prevent the Civil Service Commission from taking over the job of examining candidates for plumbing licenses.

The General City Law, he said, requires all plumbing examinations to be conducted by the Examining Board of Plumbers. Because it is a state law, he added, the city cannot change it.

The idea of having the examination power shifted to the Civil Service Commission has been discussed by Mayor Frank A. Sedita, but no action to implement the idea has been taken.

National-U. S. Stockholders OK Crane Sale

BALTIMORE — Stockholders of National-U. S. Radiator Corp. overwhelmingly approved the sale of the company's major operating assets and business to the Crane Co. for more than $15,000,000 in cash.

At the stockholders meeting here Jan. 26, 899,625 shares, equivalent to 95% of the shares voting at the meeting, or equal to 82% of the shares outstanding, approved the sale.

The stockholders also approved the change of National-U. S. Radiator's name to Natus Corp. and an increase in the authorized capital stock from 1,500,000 shares (of which approximately 1,104,000 shares are outstanding) to 5,000,000 shares.

The sale to Crane and the change of name was expected to be consummated Feb. 1.

William T. Golden, chairman of the board, stated that after the sale, Natus would actively seek new business opportunities. Corporate funds will total close to $19,000,000 after satisfaction of all liabilities including prepayment of long-term debt, it was stated. These assets consist principally of cash, short-term government bonds, and receivables.

Justice Dept. Indicates That It Does Not Frown On All Bid Depositories

ARCADIA, Calif.—An indication that the U. S. Dept. of Justice does not frown on all bid depositories was given here recently by James M. McGrath, assistant chief of the anti-trust division's Los Angeles field office.

McGrath told the Federation of Associated Plumbing Contractors of Southern California that the Justice Department has no quarrel with depositories conducted in a fair and ethical manner to eliminate bid peddling and bid shopping.

But, he said, the department opposes bid depositories that permit collusion or operate so that most of the work goes to a few large contractors.

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Whether you FABRICATE

AIR CONDITIONER PARTS

or BUY them

there's no substitute for

H & H PRECISION

It makes a big difference – in production time and money – when the grain size, temper, and tolerances of tubing you order are exactly as you want them *the first time around*. H & H Tube & Manufacturing Company is proud of its 29 year record of serving buyers *and fabricators* of condensor evaporator coils and other air conditioner parts. Isn't it time *you* too, gave H & H a try?

Better Brass and Copper Products Since 1930

H & H TUBE AND MANUFACTURING CO.

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SEAMLESS LOCKSEAM COIL STRIP STRAIGHT AND COILED TUBE TUBULAR PARTS

For air conditioning and heat pumps... Copeland has what it takes!

Copelametic suction-cooled motor-compressors through 30 H.P. ••• a model for every application ••• rugged, reliable design proved by years of field experience ••• longer life due to highest quality control standards ••• accessible hermetic ••• positive lubrication

MODEL NR46-500

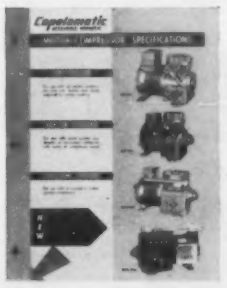
Two-cylinder, 5 H.P. motor-compressor designed to operate at 1750 R.P.M. using Refrigerant-22. Dimensions: L—20¾"; W—13"; H—16⅝". This model is typical of many that make Copelametics the outstanding motor-compressors for heat pumps . . . leaders in output, reliability and economy.

Copelametic MOTOR-COMPRESSOR SPECIFICATIONS

Model	H.P.	Cyls.	Appl.	Bore	Stroke	CFH Disp. @ 1750 R.P.M.	Refr.	Oil Rech. ozs.	Length	Depth	Height Over Mountings	Mounting Centers*	Suction S.O.V. Tube O.D.	Suction S.O.V. Type	Discharge S.O.V. Tube O.D.	Discharge S.O.V. Type	Weight Net	Weight Ship.
8R6-200	2	2	H	1 15/16"	1⅜"	492.4	R-12	72	16⅛"	12"	14"	10 1/16" x 10½"	⅞"	S	⅝"	F	151	160
9R1-200	2	2	H	1¾"	1 5/32"	339.0	R-22	72	16⅛"	12"	14"	10 1/16" x 10½"	⅞"	S	⅝"	F	151	160
3R42-300	3	2	H	2 5/16"	1⅜"	701.0	R-12	88	18 1/16"	13"	13 15/16"	11" x 11⅝"	1⅛"	S	⅝"	F	188	197
8R28-302	3	2	H	1⅞"	1⅜"	460.0	R-22	72	17½"	12"	14"	10 1/16" x 10½"	1⅛"	S	⅝"	F	174	183
LRH-420	4	2	H	2¼"	1 7/16"	698.0	R-22	88	19 7/16"	13"	16⅝"	11" x 11⅝"	1⅛"	S	⅝"	S	228	237
NR40-400	4	2	H	2¼"	1 7/16"	698.0	R-22	88	20¾"	13"	16⅝"	11" x 11⅝"	1⅛"	S	⅝"	S	231	240
LRG-520	5	2	H	2 7/16"	1 7/16"	815.0	R-22	88	19 7/16"	13"	16⅝"	11" x 11⅝"	1⅛"	S	⅝"	S	231	240
NR46-500	5	2	H	2 7/16"	1 7/16"	815.0	R-22	88	20¾"	13"	16⅝"	11" x 11⅝"	1⅛"	S	⅝"	S	234	243
MRF-500	5	2	H	2½"	1 13/16"	1080.0	R-12	96	23"	13"	18 3/16"	11" x 11⅝"	1⅜"	S	⅞"	S	265	281
MRG-750	7½	2	H	2 7/16"	1 13/16"	1020.0	R-22	96	23⅞"	13"	18 3/16"	11" x 11⅝"	1⅜"	S	1⅛"	S	285	301
MR50-760	7½	2	H	2 9/16"	1 13/16"	1136.0	R-22	96	23⅞"	13"	18 3/16"	11" x 11⅝"	1⅜"	S	1⅛"	S	285	301
9R9-750	7½	3	H	2⅜"	2"	1620.0	R-12	128	26 1/16"	14"	18¾"	12" x 15"	1⅜"	S	1⅛"	S	318	333
9R8-1000	10	3	H	2 3/16"	2"	1375.0	R-22	128	27½"	14"	18¾"	12" x 15"	1⅜"	S	1⅛"	S	344	359
4R48-1006	10	4	H	2½"	2"	2380.0	R-12	120	25⅞"	16 9/16"	17 13/16"	12" x 15"	1⅝"	S	1⅛"	S	377	395
4R48-1506	15	4	H	2½"	2"	2380.0	R-22	120	25⅞"	16 9/16"	17 13/16"	12" x 15"	1⅝"	S	1⅛"	S	388	406
6R48-1506	15	6	H	2½"	2"	3580.0	R-12	144	28⅞"	17⅝"	19 1/16"	12" x 15"	2⅛"	S	1⅜"	S	425	445
4R48-2006	20	4	H	2½"	2"	2380.0	R-22	120	25⅞"	16 9/16"	17 13/16"	12" x 15"	1⅝"	S	1⅛"	S	388	406
6R48-2006	20	6	H	2½"	2"	3580.0	R-12	144	28⅞"	17⅝"	19 1/16"	12" x 15"	2⅛"	S	1⅜"	S	425	445
6R48-2506	25	6	H	2½"	2"	3580.0	R-22	144	28⅞"	17⅝"	19 1/16"	12" x 15"	2⅛"	S	1⅜"	S	455	473
6R48-3006	30	6	H	2½"	2"	3580.0	R-22	144	28⅞"	17⅝"	19 1/16"	12" x 15"	2⅛"	S	1⅜"	S	453	473

*Note, the entire line from 2 H.P. through 30 H.P. has only three different sets of mounting centers.

VISIT THE COPELAND DISPLAY AT THE SECOND SOUTHWEST HEATING AND AIR CONDITIONING EXPOSITION FEB. 1-4 DALLAS, TEXAS BOOTH No. 216



Write for complete Copelametic motor-compressor specifications. Request Bulletin number 5907.

SINCE 1918

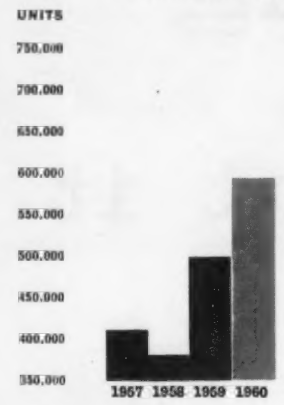
Copeland REFRIGERATION CORPORATION, Sidney, Ohio

Manufacturers of performance-proved motor-compressors and condensing units for air conditioning and refrigeration.

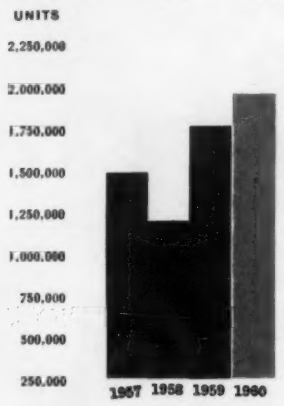
Sales Trends

(See other charts on page 1)

Auto Air Conditioners



Room Air Conditioners



Cooling Sales Gain Seen for '60--

(Concluded from Page 1, Col. 5)

industry sales in various categories of equipment in the past three years, with the shaded area indicating the consensus of predictions for 1960. The predictions vary from an increase of 10% for the large applied systems, to 25% for central residential units. Most see some decrease in furnace sales, because of probable decline in the number of home building starts.

Possible unfavorable factors are a cut in both residential and commercial construction, tight money, and very adverse weather. But most analysts don't see any minor decreases in construction as having much effect on sales. The continuing NEWS surveys on the character of the residential market (such as the one on Cincinnati in this issue) show an ever-increasing percentage of the market going to existing structures. The same seems to be true in the case of commercial.

2. Prices

Price should be considered in two phases—first, the price to the dealer or contractor, and second, the price which the dealer gets in a sale to the ultimate buyer.

While no end to "creeping inflation" seems in sight, there has not been indication of any substantial boost in prices of most of the industry's products likely before the end of the current year. In some instances improved design and production methods may bring about some price decreases.

At the retail level, an improvement in the market such as was achieved in 1959 almost always means that better prices are realized. Other factors that should help to improve prices are a "shakeout" of both marginal producers and marginal retailers, elements who had little else to offer but price; and more careful control of the inventory situation.

3. Profits

As prices become more firm, profits should improve. On some types of jobs, the labor factor still seems out of line. However, on certain kinds of installations product improvements, better tools, and changes in labor practice have cut the cost of labor, and in some instances this can improve profits. Greater attention to good management practices at the dealer level, on the part of both the manufacturer and the dealers themselves may be the most important move towards improving profits. More dealers are learning to make service a profitable part of their operations.

4. Problems

Steps are being taken to minimize some of the "irritating" and at times costly problems resulting from management policy—such as unrealistic warranties, and the piling up of unmanageable inventories. But the principal problems continue to be those items which hold back the growth of the industry—

1. Failure to attract enough competent and ambitious people to sell and install the industry's products. 2. Inadequate education and training of those who are engaged in the business. 3. Failure to develop national and local programs of any impact that will convince buyers at all levels to allocate more of their purchasing dollar for air conditioning equipment.

Welbilt Subsidiary's Marketing Policy--

(Concluded from Page 1, Col. 2)

NEWS, the subsidiary was set up when Welbilt Corp. acquired the business and assets of American Coils Co.

The Farmingdale firm says that Welbilt air conditioning and heating equipment "will be sold through—and only through—geographically protected Welbilt franchised distributors and dealers.

"Distribution will be restricted to the least number of Welbilt franchised distributors compatible with the market potential of the trading area."

Some other points made by the firm in outlining its "marketing creed" are:

"Adequate stocks will be kept at strategically located distributing points for the fastest possible delivery.

"A technical service program will provide information and assistance to the Welbilt distributor and his customers.

"National advertising and merchandising programs will be used to increase consumer demand for the Welbilt line."

The Welbilt line was listed as including self-contained air conditioners, heat pumps, air and water-cooled condensing units, water and air-cooled packaged chillers, cooling towers, condensers, gas-fired hi-boy and horizontal forced air furnaces, gas-fired boiler units, "Cloverdale" hot water boilers.

Also, residential and commercial oil-fired boiler burner units, counterflo, suspended, hi and lo-boy oil-fired winter air conditioners, combustion heating and air conditioning units, unit heaters, duct heaters, and residention radiation baseboard.

NOW! A WIDER RANGE OF REFRIGERATION PRODUCTS!

DETROIT *and* REMCO Products

—Sold by One Company

Manufacturers, wholesalers, contractors —all will be pleased to know that Detroit and Remco products will be distributed by dependable Detroit Controls. You can get expansion valves, solenoid valves, filter-driers, sight glasses — a wide range of products — from one company, a single source of supply. Better investigate today. Get the full story at the ARI Show, Booth Number 503, in Atlantic City, N. J.

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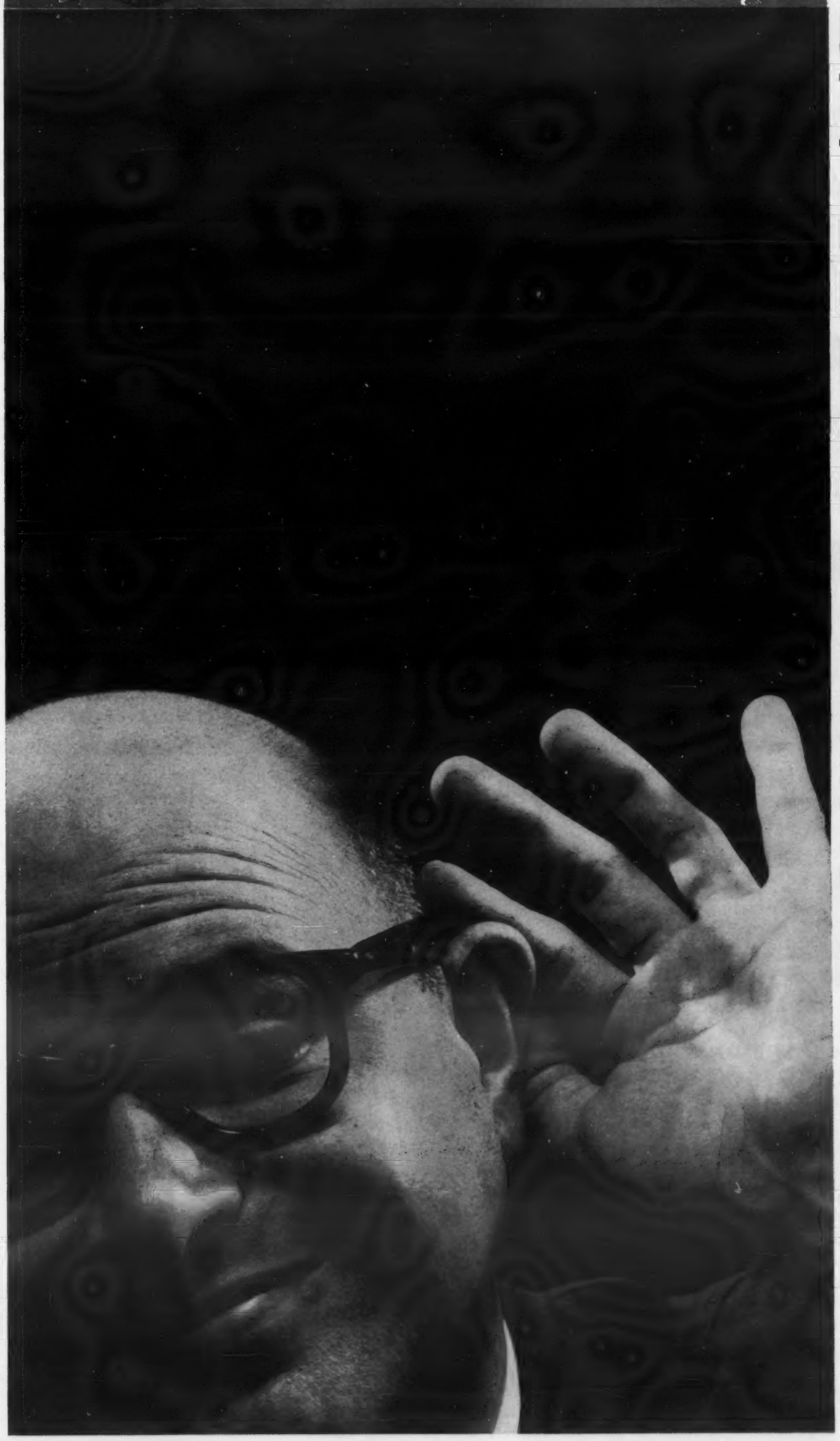
DETROIT CONTROLS DIVISION

GENERAL ELECTRIC SALUTES THE
2ND SOUTHWEST
HEATING AND AIR CONDITIONING EXPOSITION
DALLAS, TEXAS — FEB. 1-4, 1960



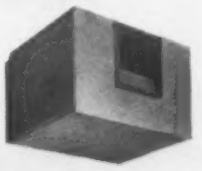
STAY TUNED TO GENERAL ELECTRIC FOR THE LATEST AIR CONDITIONING DEVELOPMENTS

General Electric was a pioneer in air conditioning for residential as well as commercial and industrial application and continues to be a leader in its development. G. E. research and engineering are constantly developing more efficient and less costly ways to improve existing equipment. To stay ahead of competition, "stay tuned" to G. E. for new and better ways to air condition—profitably!

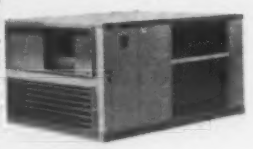
CENTRAL SYSTEM AIR CONDITIONING

THESE 2 TYPES MEET ALL RESIDENTIAL REQUIREMENTS—OVER 70% OF COMMERCIAL AND INDUSTRIAL

1. Split (two-piece) system—weather-resistant remote outdoor unit and an air handling unit (shown), which can be floor- or ceiling-mounted. 2½ to 5 tons.



2. Integral system—compact and complete in a single, attractive, weatherized package. Installs through exterior wall, or entirely outdoors. 2, 2½ and 3 tons.



Also, a complete line of gas- and oil-fired warm air furnaces.

For complete information, contact your nearest G-E Heating and Air Conditioning distributor—or write to:

GENERAL ELECTRIC

Air Conditioning Dept., Tyler, Texas

Series of Systems In Equipment Centers Air Condition 18-Story Bank Building

LOS ANGELES—The new 18-story California Bank building here is air conditioned throughout from a series of systems located in "equipment centers" throughout the building. Recold cooling and heating coils in these systems condition the air for various parts of the building.

First commercial structure of more than 13 stories erected in downtown Los Angeles since repeal of the 150-ft. height restriction in 1956, the new building rises 267 ft. above ground level, and has five basement levels. It will serve as head office for the bank's branch office system.

Recold heating and cooling coils are located in equipment centers on the eighteenth and fourth floors and on the fourth basement level. The eighteenth floor center air conditions and heats the sixth through the eighteenth floors, the four floor unit serve the first five floors, and the basement center serves the bank vault area in the fourth basement.

In addition, a fourth Recold unit, located on the first basement level, provides sufficient heating to remove chill and dampness from the garage area.

The air conditioning was installed by Air Conditioning, Inc., of Southern California.

REPRINTS
SELLING FOR PROFIT.
By Frank Klein—Only $1.00 ea. Clip this ad and mail with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

Bryant 'Train the Trainer' Schools For Gas Air Conditioner Scheduled

INDIANAPOLIS — Bryant Mfg. Co.'s "Train the Trainer" program on its gas air conditioner has been so enthusiastically received that an additional session has been scheduled for the week beginning Monday, Feb. 8, the company announced.

The Train the Trainer schools are being held at Bryant's general offices here. The course is planned primarily for the personnel of gas utilities and distributors who in turn will be conducting training schools for the members of their organizations who will service Bryant's gas air conditioner.

The course emphasizes the procedures and techniques for conducting technical training, and upon completion each registrant receives a comprehensive manual and one hundred 2 by 2 slides for his use in carrying on local service training activities, it was pointed out.

Except for the additional session on Feb. 8, Bryant's regular gas air conditioning training schools will be held throughout February, March, and April. A new course will begin each Monday. Applications should be made in writing to Bryant Mfg. Co., attention Service and Application Dept., 2020 Montcalm St., Indianapolis 7, Ind.

Applications should be made at least a week before the class begins and applicants should indicate a first and second choice of dates in the event the desired class is filled.

Airtemp Names 14 New Distributors

DAYTON—Fourteen new distributors—seven for room air conditioners and as many packaged heating and cooling equipment—have been appointed by the Airtemp Div., Chrysler Corp., according to J. B. Ogden, vice president in charge of sales.

Appointment of new distributors in each category in Kansas City, Mo. followed the closing of the factory branch in that city, Ogden said, and is in keeping with Chrysler policy to operate through distributorships wherever possible.

Some of the appointments were full-line franchises awarded to distributors who had previously handled either room units or packaged equipment, but not both.

New room air conditioner distributors:

Wells - Jordan Distributing Co., Kansas City, Mo.; Penn Appliance Distributors, Inc., Harrisburg, Pa.; Bogen, Inc., Columbus, Ohio; Neel & Floyd, Inc., Memphis; Fraker Equipment Co., Knoxville, Tenn.; D. M. McCarthy & Co.; Milwaukee; Engles Supply Co., Ft. Smith, Ark.

New packaged equipment franchises:

Fraker Equipment Co., Knoxville; Neel & Floyd, Inc., Memphis; Climate Supply, Inc., Div. of Truog-Nichols, Inc., Kansas City, Mo.; Air Temperature Co., Grand Rapids, Mich.; Gundlach Distributing Co., Richmond, Va.; Davidson Associates, Inc., Toledo; C. Carson Wholesale Distributors, Detroit.

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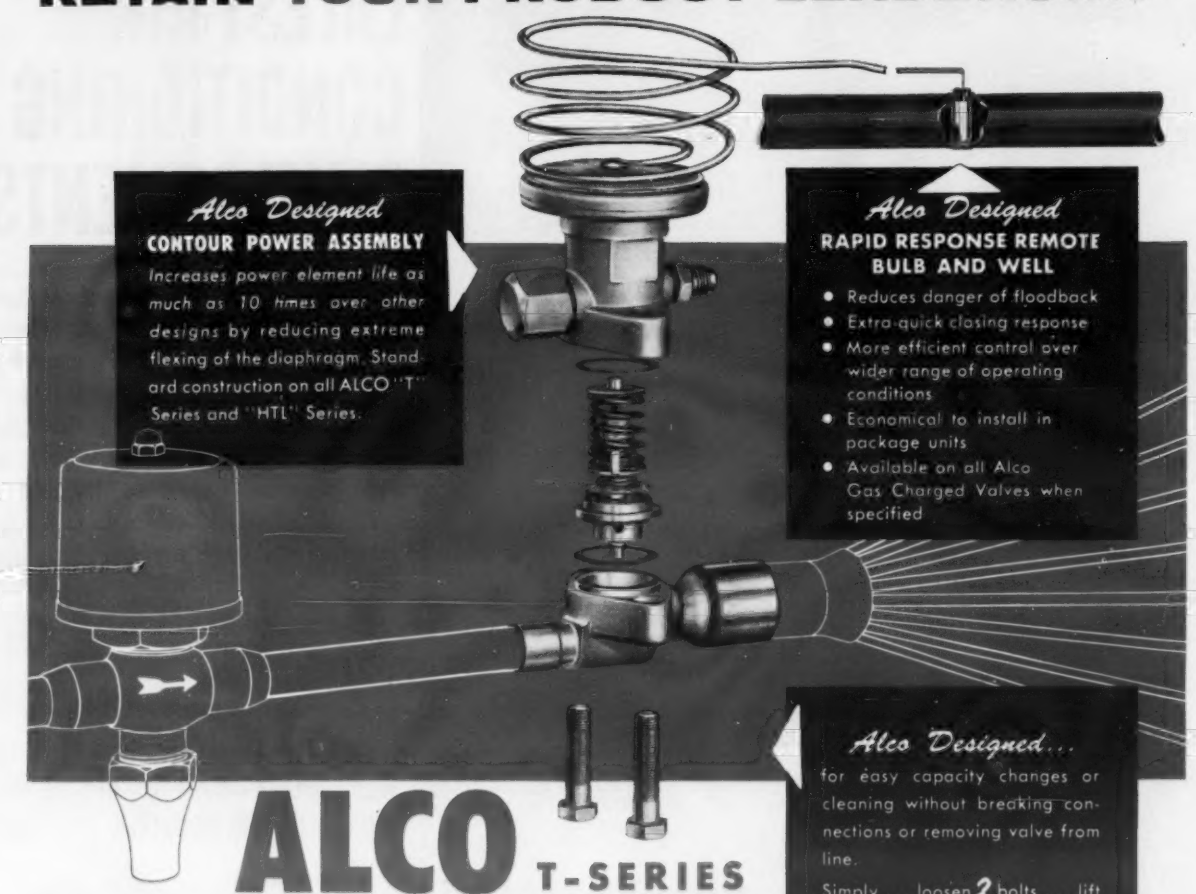
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NWAHACA Revises Prices On Manuals, Worksheets

CLEVELAND—A new price list for manuals and worksheets published by the National Warm Air Heating & Air Conditioning Association has been released.

The revised prices, that increased the cost of manuals and worksheets slightly, were approved by the association's board of trustees in St. Louis during the 46th annual convention.

Prices for the widely used publications are as follows:

Manuals	
Digest	$1.50
Manual 1	1.00
Manual 2	1.00
Manual 3	1.50
Manual 3 (Simplified)	.75
Manual 4	1.75
Manual 5	1.00
Manual 6	1.25
Manual 7	1.00
Manual 7A	1.00
Manual 8	1.50
Manual 9	1.25
Manual 9 (Supplement)	.50
Manual 10	1.25
Manual 11	1.50

Worksheets per 100 Copies	
Form 1	$20.00
Form 2	7.00
Form 2A	5.00
Form 3	7.00
Form 4	7.00
Form 6	7.00
Form 6A	5.00
Form 9A	7.00
Form 9B	7.00
Form 9C	7.00
Form 10	5.00
Form 11	7.00
Form 41	10.00
Form 46	10.00
Form H1	8.00
Complete Warm Air Heating and Air Conditioning Library	20.00

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New policy!
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The WELBILT MARKETING CREED:

WELBILT air conditioning and heating equipment will be sold through – and only through – geographically protected WELBILT Franchised Distributors and Dealers.

Distribution will be restricted to the least number of WELBILT Franchised Distributors compatible with the market potential of the trading area.

Adequate stocks will be kept at strategically located distributing points for the fastest possible delivery.

A technical service program will provide information and assistance to the WELBILT Franchised Distributor and his customers.

National advertising and merchandising programs will be used to increase consumer demand for the WELBILT line.

All possible sales promotion assistance—through industry show participation, personal contact, training and other practical means—will be provided.

WELBILT Franchised Distributors and Dealers will be kept up-to-date on terms, conditions of sales and price.

The sound, fair business practices that are the basis of the increasingly prosperous relationship between WELBILT and its distributors and dealers will be unalteringly continued.

THE WELBILT LINE... America's newest complete line of quality air conditioning and heating products.

SELF-CONTAINED AIR CONDITIONERS • HEAT PUMPS • AIR AND WATER COOLED CONDENSING UNITS • WATER AND AIR COOLED PACKAGED CHILLERS • COOLING TOWERS • EVAPORATOR CONDENSERS • GAS FIRED HI-BOY FURNACES • GAS FIRED HORIZONTAL FORCED AIR FURNACES • GAS FIRED BOILER UNITS • CLOVERDALE HOT WATER BOILERS • RESIDENTIAL OIL FIRED BOILER BURNER UNITS • COMMERCIAL OIL FIRED BOILER BURNER UNITS • COUNTERFLO, SUSPENDED, HI AND LO-BOY OIL FIRED WINTER AIR CONDITIONERS • COMBINATION HEATING AND AIR CONDITIONING UNITS • UNIT HEATERS • DUCT HEATERS • RESIDENTIAL RADIATION BASEBOARD

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Farmingdale, New Jersey

SUBSIDIARY OF WELBILT CORPORATION

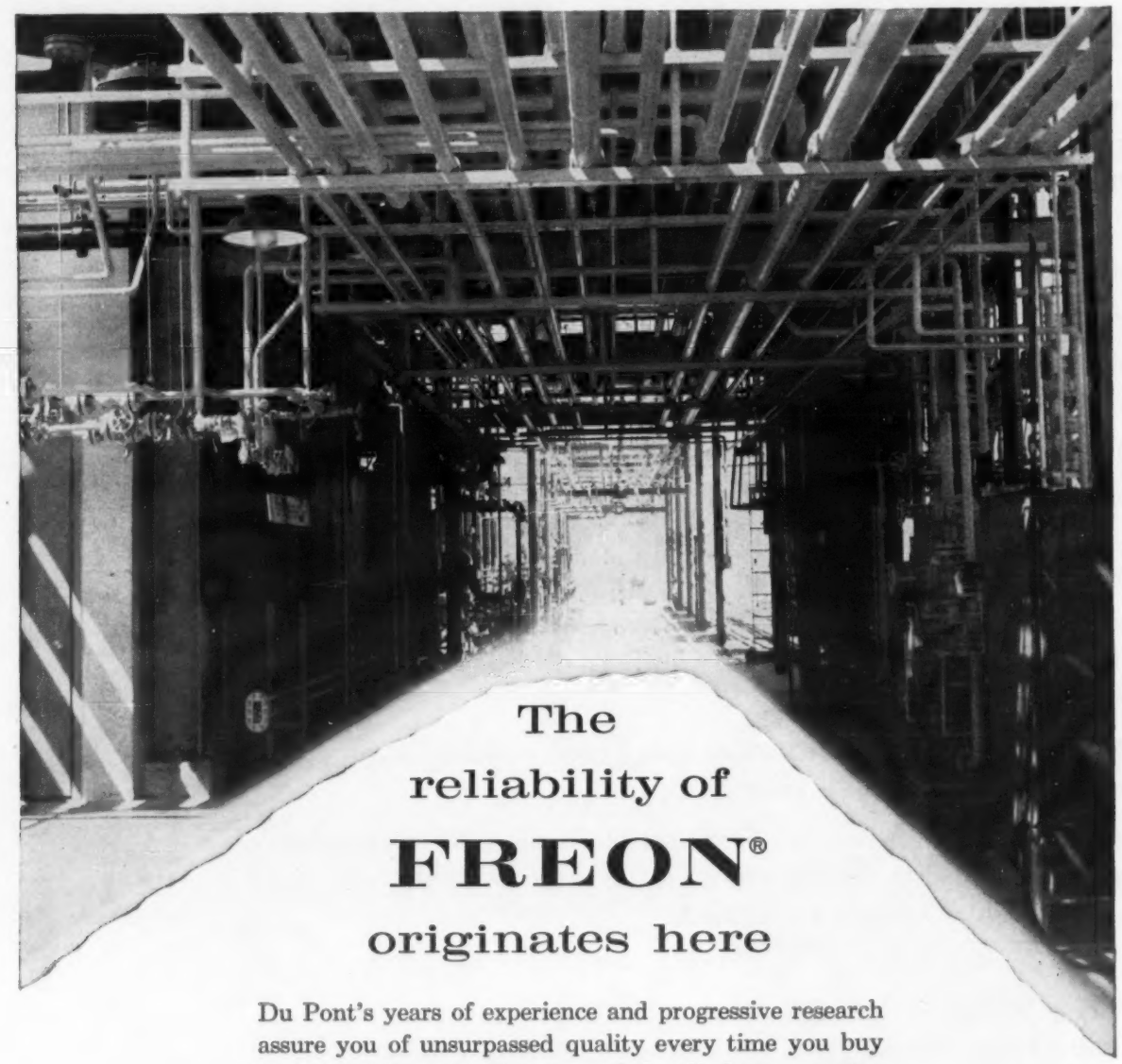
2957

Self Contained or Central Air Conditioning Installations-Chicago First 9 Months - 1959

Unit Size	No. Jobs	Units	Rated Tonnage	Total Kw. Connected
Electric Air Conditioning Installations				
2 Ton	199	289	578	939.25
2½ Ton	16	36	90	132
3 Ton	243	291	873	1,396.80
4 Ton	4	13	52	104.50
5 Ton	400	589	2,940.5	3,856.26
7½ Ton	209	318	2,385	2,544
10 Ton	98	143	1,430	1,501.50
15 Ton	26	39	585	604.50
20 Ton	12	17	340	340
25 Ton	19	20	400	500
30 Ton	20	26	780	780
36 Ton	1	1	36	36
40 Ton	11	14	560	560
46 Ton	1	2	92	92
50 Ton	18	27	1,350	1,350
60 Ton	3	5	300	300
75 Ton	5	6	450	450
100 Ton	7	7	700	700
125 Ton	2	2	250	250
150 Ton	1	1	150	150
160 Ton	1	1	160	160
175 Ton	1	1	175	175
195 Ton	1	1	195	195
200 Ton	2	2	400	400
Over 200 Ton	11	12	5,898	5,898
Total	**1,311**	**1,863**	**21,282.0**	**23,427.8**
Gas Air Conditioning Installations				
2 Ton	1	1	2	
3 Ton	16	16	48	
3.5 Ton	3	3	10.5	
5 Ton	58	65	325	
7.5 Ton	22	25	187.5	
22 Ton	1	1	22	
Total	**101**	**111**	**595**	

Permits Issued for Self-Contained And Central Air Conditioning By Month

Period	No. Jobs	Total Units	Total Hp.	Total Kw.
First Quarter	235	359	5,098.5	5,438.4
April	132	194	2,343.5	2,543.4
May	136	208	2,117.0	2,362.9
June	227	304	4,190.5	4,550.3
July	268	353	4,524.0	4,934.7
August	161	235	1,263.5	1,586.6
September	153	211	1,715.0	1,960.4
Total 9 Months	**1,312**	**1,864**	**21,252.0**	**23,376.7**



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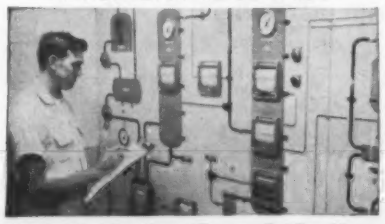

LABORATORY CONTROL

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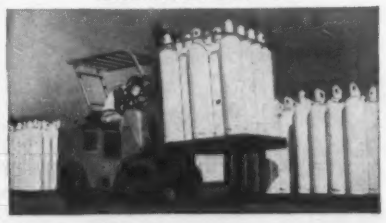


*Freon and combinations of Freon- or F- followed by numerals are Du Pont's registered trademarks for its fluorinated hydrocarbon refrigerants.

In 9 Months

Install 21,000 Tons of Cooling In Chicago

20% Drop Over Last Yr. Noted In Permit Survey

CHICAGO—More than 21,000 tons of air conditioning, divided among 1,864 units on 1,312 jobs were installed in the city of Chicago during the first nine months of 1959, a study of statistics taken from city permits reveals.

Total kilowatts connected during that period reached 23,396.81.

These figures cover only self-contained or central air conditioning units of 2 tons capacity or larger. It is believed that almost all of this tonnage was installed in commercial or industrial applications, as Chicago does not require permits for residential installations.

The tonnage installed in Chicago was about 20% less than was installed during the same period in 1958, the figures indicated. However, this does not necessarily represent a barometer of business activity for the area, as only installations within the city limits are covered.

A total of 142 different contractors participated in the installation of these air conditioners in this period. The top contractor installed 101 units totaling 1,133 hp., while at the other end of the scale 65 "contractors" installed one unit each.

Permits revealed that 595 tons of gas air conditioning plus two steam absorption jobs totaling 920 tons were installed in the city during the nine months' period.

Marley Exchanges Managers In Four Field Sales Offices

KANSAS CITY, Mo. — The Marley Co. has announced an exchange of managers in four of its field sales offices.

One move takes Wesley G. Cramer, for 23 years manager of the company's Ohio Valley territory, from Cincinnati to Kansas City. Cramer, who is a vice president of the company, will be regional sales manager for the mid-central zone.

W. O. Kretzmeier goes to Cincinnati to assume management of Ohio Valley regional sales. Prior to this move, he was manager of Marley's mid-central states operation at Kansas City.

Another exchange affects the New York and Chicago offices of the company.

From Chicago, Robert L. McFadin goes to New York to head the company's New York-New England zone, after 10 years in charge of its Great Lakes sales area. The latter territory will be managed by H. J. Bierman, formerly of the New York office, where he directed regional sales in the northeastern coastal zone.

Personnel of the four offices is not affected by these management transfers.

Marsh Expansion Will Increase Capacity 40%

SKOKIE, Ill. — A. D. Rose, president of Marsh Instrument Co., division of Colorado Oil & Gas Corp., announced plans for a large expansion program.

Contracts for factory enlargement have been awarded and orders for additional machinery and equipment have been issued or will be in the near future. Upon completion of the program, an increase of 40% of production capacity will have been added to the existing facilities, it was stated.

Rose said this was the third major enlargement of the plant in ten years. An increase of more than 25% in gross sales and a present backlog of 75% above a year ago makes this expansion a prime necessity.

Marsh Instrument also has branch factories in Houston, Texas and in Edmonton, Alta., Can., as well as sales offices in all major cities in the United States and sales representation throughout the free world.

Completion of the program is scheduled for the fall of 1960.

Buffalo Forge Sees Sales Up 10% In Fiscal 1960

BUFFALO — Buffalo Forge Co. is counting on another good business year, according to William R. Heath, president.

"Based upon the rate of increase in incoming orders during 1959, we expect an improvement of 10% in sales during the current fiscal year which began Dec. 1, 1959," said Heath.

"This year should see an increased activity in power plant expansion, continued construction of air conditioned buildings, and more air pollution control installations, all of which will benefit Buffalo Forge.

"Machine tool activity already is on the increase, and new developments in naval and marine circles should also mean more sales of fans and pumps. Export business should be aided by the recently announced 'Buy American' policy of the Development Loan Fund.

"Assuming no further upsets to the national economy resulting from labor unrest, general business in 1960 is expected to be good, and this should be reflected in increased sales and earnings for Buffalo Forge."

Third PHCIB Course To Train-the-Trainer Will Open March 28

CHICAGO — A third Train-the-Trainer class sponsored by the Plumbing-Heating-Cooling Information Bureau to prepare instructors to conduct the Selling Fundamentals Course locally will be held the week of March 28 in Chicago.

The first Train-the-Trainer class was held in December and the second in January, also in Chicago.

Wasson Elected Clarage President

KALAMAZOO, Mich.—Robert A. Wasson was elected president and general manager of the Clarage Fan Co. here at a meeting of the firm's board of directors.

R. A. Wasson

Wasson, who has been vice president and general manager since 1945, succeeds Harry R. Clarage, who died suddenly Dec. 26.

All other officers of the company will continue in their same positions—C. C. Wheeler, treasurer; S. H. Downs, v. p.-engineering; C. R. McConner, v. p.-sales; L. R. Spencer, v. p.-mfg.; and A. H. Rankin, secretary.

Wright-Temp Names Wallace Exec. V. P.

PHOENIX, Ariz. — Elevation of W. W. Wallace from general manager of Wright-Temp Mfg. Co. to executive vice president of that firm has been announced by J. L. Wright, president of Wright Mfg. Co. here, of which Wright-Temp, also of Phoenix, is a subsidiary.

One of Wallace's first acts in his new post was to appoint R. L. (Dick) Swearingen as the firm's West Coast sales engineer. Formerly sales engineer at Eckern Co. in Los Angeles, Swearingen has been active in the heat pump field for more than eight years.

An all-electric heat pump and refrigerated air conditioning line are among the principal products manufactured by Wright-Temp Mfg.

Insufficient Humidity Blamed for Cracks In Famous Paintings

WINNIPEG, Man., Can. — Poor air conditioning has been blamed for large cracks that appeared in six world-famous paintings lent to the Winnipeg Art Gallery by Irish art collector, Lord Gort of Garaway.

According to Dr. Ferdinand Eckhardt, damage to the 15 and 16th Century German and Flemish works was caused by insufficient humidity in the air.

The paintings, which included "The Adoration of the Magi" by Heilige Sippe and "Portrait of a Lady" by Cranach, were part of a 16-piece show described as "the most valuable collection ever on permanent display in Winnipeg."

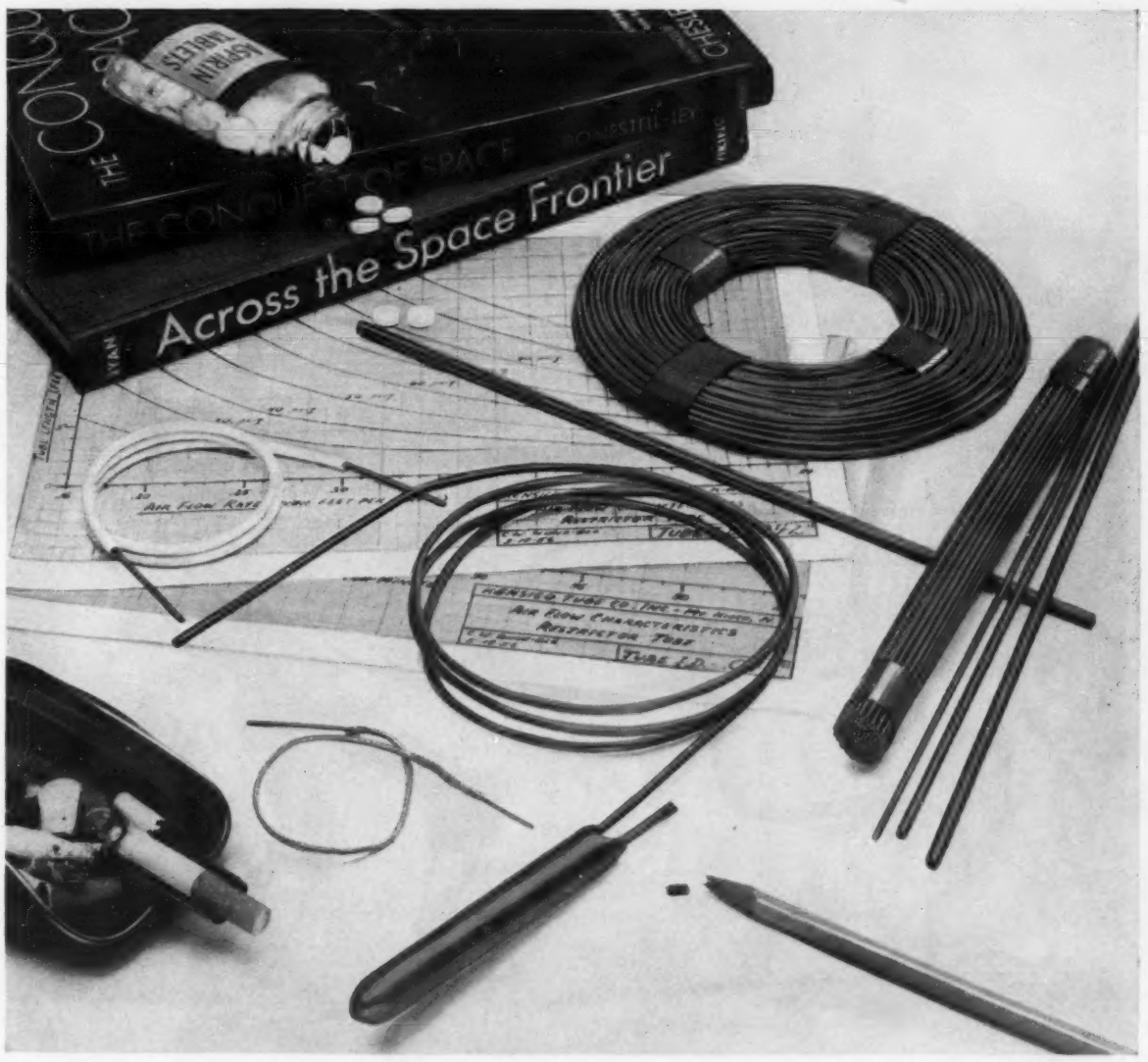
Cost of the damage was not estimated.

Industrial Electric Heating Conference To Open Feb. 1

CINCINNATI—The four-day fourth National Industrial Electrical Heating Conference, sponsored by the Industrial Electrification Council, will get under way Feb. 1 at the Netherland-Hilton here.

Applications of industrial electric heating will be discussed by a group of 33 specialists.

Speakers include Dr. S. W. Herwald, vice president of research for Westinghouse Electric Corp.; Oscar L. Dunn, general manager of the motor and generator division of General Electric Co.; Dr. H. K. Ihrig, vice president of research for Allis-Chalmers; and Edwin Vennard, vice president of Edison Electric Institute.



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Evening Study on Sales, Engineering

Distributor's Training Program Aims at Preparing Dealers for Expanding Market

HIALEAH, Fla. — Going on the premise that a "true distributor operation" will achieve its goals only if it succeeds in upgrading the operations of its dealers, Weathermatic Corp., Carrier distributor serving the Florida Gold Coast area, has launched an intensive training program aimed at improving all phases of the dealer's operations.

The training program is the personal project of Frank Teofani, president and general manager of Weathermatic Corp. Until March, 1959 Teofani was vice president and general manager of Carleton-Stuart Corp., largest Carrier distributorship in the country.

"When I learned that the distributorship in south Florida was available, I surveyed the area, which includes the entire Gold Coast from the Keys to Vero Beach, and came to the conclusion that a tremendous potential existed," Teofani relates.

"Upon taking over as distributor my first interest was in putting together a tight organization—not a large one. We started off with 14 people that I handpicked. Today there are only 18 in the company. In the first seven months of our existence, we doubled the business done in the entire previous year. For the coming year, we anticipate an additional 50% gain."

The survey of the market which he made indicated that because of the rapid growth and the extensive potential over the past few years, organized distributorship operations has fallen far behind the needs, Teofani declared.

"From what I could see, there had been little of true distributor-dealer operations by any of the companies operating in the area," he said. "Some of the sales of air conditioning equipment were being made through dealers, many of them were not.

"As I see it, this disorganized distribution has resulted in the consumer being penalized by poor installations and inadequate and incompetent service. It was also obvious to me that everything else that goes with sound distribution has been neglected such as market research, market coverage, advertising, promotion, engineering, and sales approach."

Distributor's Training Center

TRAINING PROGRAM being carried out by Weathermatic Corp., Carrier air conditioning distributor for Florida's "Gold Coast" area, is being conducted in special facilities adjoining the company's warehouse. Note the special "Training Center" designation on the building.

A TRAINING CLASS in session, with Douglas L. Howard, instructor on engineering matters, using the blackboard to illustrate a point. At far left corner may be seen part of a slide film projector. Many visual aids are used in the training. The distributor aims to hold attendance at each class to no more than 25.

Dealers Educated on Dealer-Distributor Operation as Team

Teofani's first step, after setting up his nucleus of franchised dealers (there are now some 75 such in the area) was to embark upon a program of educating the dealers on the concept of a sound distributor-dealer operation, touching on all the basic elements required in developing a distributor-dealer team from the ground up.

"One of the points made was that it was obvious to those experienced in market analysis to see that the potential had grown to such a degree that the market could be covered adequately only by a dealer organization whereas, five to seven years ago, when the potential was not as great, the market might have been adequately covered by having a relatively few direct selling organizations.

"The residential air conditioning market really has a tremendous potential in this area, and we emphasized that the greatest market penetration by a single manufacturer will go to the best organized and trained distributor-dealer combination.

"My opinion is that by the end of 1960, our sale of equipment to the residential market will represent 50% of our total annual volume in all products. Consequently, we are placing emphasis on organizing and training dealers to cover the residential market."

One of the elements in good dealer management, taken from

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Friendly Symbol of Fresh, New Service:
Look for UCON IKE !

UCON IKE stands for America's newest refrigerants—top-quality UCON Brand Refrigerants. *Plus* a brand-new approach to service . . . backed by a published marketing policy.

You'll like the people who make this policy work for you. They're friendly, competent, imaginative people, who know and care about your problems.

The service they provide is what makes the *real* difference in refrigerants!

UCON Refrigerants: 5 top-quality grades; full range of unit sizes; color-coded at the top; personalized service.

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Exclusive Sales Agent to Air Conditioning and Refrigeration Wholesalers
ANSUL CHEMICAL COMPANY, Marinette, Wisconsin

UCON and UNION CARBIDE are registered trade marks of Union Carbide Corporation

UNION CARBIDE product Ucon BRAND refrigerants — exclusive sales agent ANSUL

Teofani's experience in the New York market, is an insistence that, wherever possible, the dealer develop "specialists" in the selling phase of the business —to cover the residential, commercial, and icemaker markets, for example.

But the big push in upgrading dealer activity is the training program. Teofani says that it has been a source of gratification to him that representatives of competition have told him that "what we were doing would up-grade the entire industry," and also that other distributors have initiated programs for their people.

Program Will Upgrade Industry as a Whole

"Naturally, as all the major people in the industry embark upon a dealer training program, it will result in the consumer getting more satisfaction for his dollar," says the Weathermatic president, "the dealer being placed in a position where he will realize the margins to which he is entitled, and it will create a healthier climate for the industry as a whole."

Those who attend Weathermatic's training programs are dealer principals, sales engineers, some installation and service personnel, and in larger organizations supervisors and men having to do with operations. Programs are carefully planned so that the subject matter is consistent with what the majority of those in attendance will be able to absorb. Eventually, the course may be divided into basic and advanced classes.

Plans Courses for Builders, FHA Workers, And Utility Personnel

As part of its over-all training program, Weathermatic hopes to have indoctrination classes for builders and real estate sales personnel and FHA and public utility personnel who have an interest in air conditioning.

Classes are held in the distributor's "Training Center," a building adjacent to the warehouse especially equipped for classroom work, and specially labeled on the exterior (as part of the program to impress upon the dealers the importance which the distributor attaches to training). Most of the classes

(Concluded on next page)

Lesson Plan
Commercial and Applied Training Schedule
Psychrometrics

TIME	SUBJECT	INSTR. MATERIAL	STUDENT MATERIAL	INSTRUCTOR
8:00 to 8:05	Introduction to Evening Subjects			Carvel
8:06 to 8:20	Review of Last Class, Q&A and Work Session No. 1	Carrier Meeting Guide ST100-03	Carrier Student Pkg. ST100-03	
8:20 to 8:35	Film—Part 3 of Air Cond. Processes	Carrier Film Air Cond. Processes		
8:35 to 8:50	Discussion of Following: 1. Plotting Air Mixtures	Carrier Psy. Chart	Carrier Psy. Chart	
9:00 to 9:10	Discuss Sensible Heat, Lat. Heat and Total Heat 2. S/T Ratio— How Plotted on Psy. Chart	Carrier Psy. Chart	Carrier Psy. Chart	
9:10 to 9:25	Discuss: 1. Heating Processes 2. Cooling Processes with Graphic Rep.	Carrier Psy. Chart	Carrier Psy. Chart	
9:25 to 9:40	Discuss: 1. Enthal. with Graphic Rep.	Carrier Psy. Chart	Carrier Psy. Chart	
9:40 to 10:00	Work Session No. 2	Carrier Meeting Guide ST100-03	Carrier Study Pack ST100-03	

Buffalo, Oklahoma City Dealer-Contractors Get Silver Shield Story

CLEVELAND — Heating and cooling dealer-contractors in the Buffalo County marketing area and the Oklahoma City metropolitan area head the Silver Shield story at separate meetings held recently, according to the National Warm Air Heating & Air Conditioning Association here.

The Silver Shield program was developed by NWAHACA.

The Oklahoma City meeting was staged at the Service Center of the Oklahoma National Gas Co. Jan. 21. Arrangements for the meeting were made in cooperation with Peter Hessmer, Hessmer Co., chairman of the local Silver Shield Action Committee. Also in attendance were dealer-contractors from Midwest City, Del City, Bethany, and The Village.

The Buffalo meeting was held Jan. 25 in the Niagara Room of the Iroquois Gas Co. Cooperating in making arrangements was Jack Allen, Allen Heating Supply Co., local Silver Shield Action Committee chairman.

THERMOSTATIC EXPANSION VALVES
AUTO. EXPANSION VALVES
WATER REG. VALVES
FILTERS
DRIERS
FOR REFRIGERATION,
AIR CONDITIONING
FILTERS AND DRIERS
PRESSURE REGULATING VALVES
SOLENOID VALVES FOR NONCORROSIVE REFRIGERANTS OR WATER
AUTOMOTIVE AIR CONDITIONING
DISTRIBUTORS
619 DEVICES for refrigeration and air conditioning control and their full specifications are organized for quick reference in the newest CC catalog. Only the basic models are illustrated on this page. You should have the whole catalog. Write for CC Catalog W-5-S today to the address below.
Creative controls for industry
CONTROLS COMPANY OF AMERICA
2460 N. 32nd St., MILWAUKEE 10, Wis.
COOKSVILLE, Ontario • Postfach 313, ZUG, Switzerland

Distributor's Dealer Training--

(Concluded from preceding page)

are held in the evenings, although for some special groups, daytime instruction is given in concentrated form.

An effort is made to limit each class to 25 attendees in order to provide optimum effectiveness. When there is a sufficient excess of students beyond this number, repeat classes will be held.

A registration fee is charged, this varying depending upon the amount of literature and materials furnished the students. For some classes the amount is only a few dollars, for the training program on Commercial and Applied Equipment enrollment fee is $15 per man to partially offset the cost of such items as the text "Modern Heating, Ventilating, and Air Conditioning" by Carrier, Cherne, Grant and Roberts; pocket duct sizing slide rule; notebook and training literature; pocket slide-rule; and plastic psychrometric chart.

The training sessions, which began in November and which are continuing into February, are programmed by type of equipment primarily — residential, commercial and applied products, room air conditioners and icemakers. Separate sessions were also provided on service operations.

For each type of product there is a breakdown of instruction by type of subject. In residential this would include market analysis, air conditioning fundamentals, survey and load analysis, air distribution, duct design, grilles, insulation, product story and competitive comparison, and others.

For commercial and applied products this would include such items as body comfort and properties of air, psychrometrics including plotting of air mixtures and discussion of sensible latent and total heat, unusual applications, load estimating, air distribution, package equipment selection, applied air problems, applied refrigeration selection, and others.

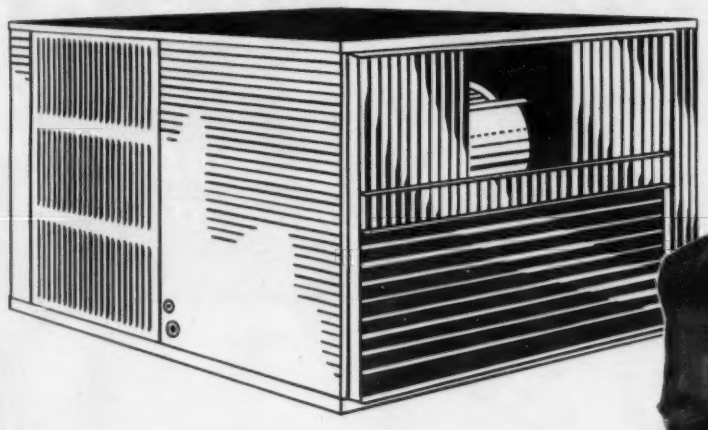
Each training session is carefully outlined in writing, the outline covering the time to be devoted to each subject, instructional material, student matter, and the name of the instructor. Samples of the outline for *one* such training session for the residential, and the commercial and applied schools.

Lesson Plan
1960 'Residential' Training Schedule

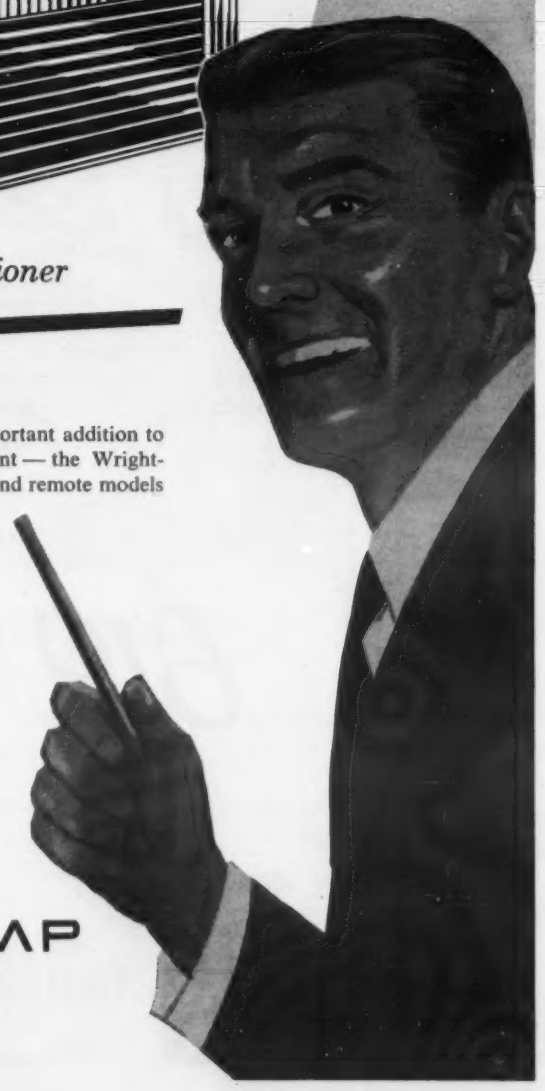
TIME	SUBJECT	REFERENCE	TRAINING AIDS	INSTR.
8:00 to 8:15	Introduction to 5 Classes	Lesson Plans	None	Carvel
		Lesson Plans	None	Orlando
8:15 to 8:30	Carrier Background	"Let's Talk About Carrier" book	None	Carvel
	Carrier Background		None	Orlando
8:30 to 8:50	Market Analysis	Dupont Survey	None	Carvel
	Market Analysis	Dupont Survey	None	Orlando
9:00 to 9:30	Air Cond. Fundamentals	Films 100ST.F1 and Meeting Guide	Sound Slide Film 100-STF1	Carvel
				Orlando
9:30 to 9:50	Question & Ans.		Student Training Packet ST100-01	Carvel
	Question & Ans.			Orlando
9:50 to 10:00	Quiz			Carvel
	Quiz			Orlando

NOW, from
WRIGHT-TEMP

The Incomparable
Wright-Temp Heat Pump



year-'round air conditioner



Wright Manufacturing Company is proud to announce an important addition to their complete line of fine-quality air conditioning equipment — the Wright-Temp Heat Pump. In 2, 3, 5, 7½ and 10 ton sizes — package and remote models to meet every installation requirement.

Famous Wright efficiency of design and quality of materials and workmanship assure you of increased customer satisfaction and fewer "trouble calls".

The Wright-Temp Heat Pump is built and tested in the Southwest specifically to meet the extreme demands of Southwestern climates. Balanced engineering provides maximum air conditioning efficiency at lower cost in even the most extreme weather conditions.

All Models Calorimeter Rated *Beyond*
A.R.I. Specified Conditions to 115°

For Complete Information write to
WRIGHT-TEMP
MANUFACTURING COMPANY
2902 West Thomas Road, Phoenix, Arizona
"Creating New Climates for Better Living"

NLRB Orders Union To Cease Requiring Referral Clearance

WASHINGTON, D. C. — The National Labor Relations Board has ordered Local 425 of the United Association, Hazleton, Pa., to cease giving effect to any agreement requiring referral clearance by the union as a condition of employment with Lummus Corp., industrial construction and engineering firm.

The board also ordered the union to:

Cease causing Lummus to discriminate against employes.

Cease operating an exclusive hiring hall except under the standards specified in the "Mountain Pacific" case.

Notify Lummus and the charging party (an individual), in writing, that it has no objection to the charging party's employment.

Reimburse all employes for monies illegally exacted.

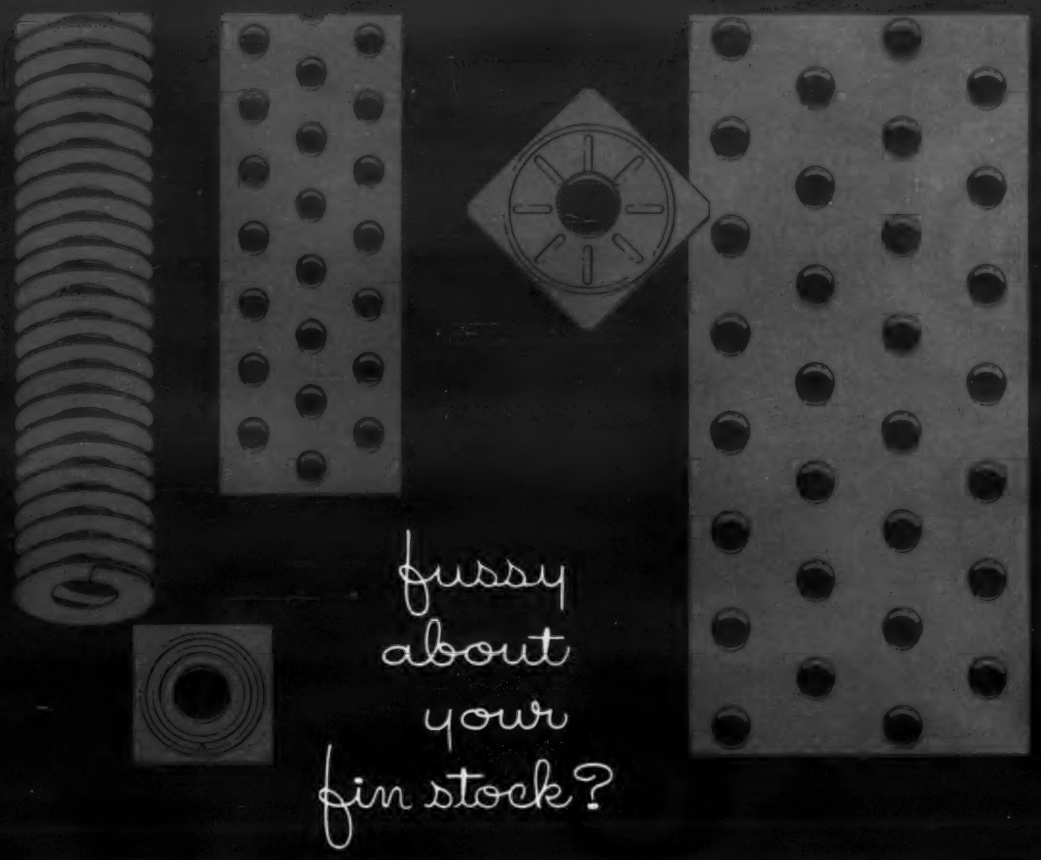
At the same time, the board dismissed the complaint insofar as it alleged any unfair labor practices by the union in causing one of the members of the Hazleton Association of Plumbing Contractors, Inc. to refuse employment to the charging party and in maintaining or giving effect to any contract with the association in violation of the National Labor Relations Act.

In another case, NLRB Trial Examiner George A. Downing recommended that Local 8 of the UA, Kansas City, Mo., cease inducing and encouraging the employes of Eayne Kniffen and Leo Hoffman, general contractors, and other employes to strike or refuse to handle or work on any goods or to perform any service, where an object thereof is to force or require Kniffen and Hoffman, or any other employer or person, to cease doing business with Bishop Plumbing & Electric Co.

Controls Co. Elects H. T. Ames Director

SCHILLER PARK, Ill.—Harold Taylor Ames, industrialist, has been elected director of Controls Co. of America, Louis Putze, president, announced.

Ames was chairman of the board of directors of Electro-snap Corp., Chicago, before its merger into Controls Co.



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Sure you are!

and you'll find just what you want in _____ SCOVILL _____

TRUSPEC Aluminum Fin Stock, combining superior uniformity in the sheet, side to side and end to end, as well as close tolerance adherence to customers' tight specifications, can help fabricators speed their operations and achieve superior heat transfer components.

SPECIAL INTERMEDIATE TEMPERS, to permit just the right degree of stiffness and workability, dead softness or ample rigidity, are a Scovill specialty.

No matter what methods of fabrication and assembly you are using, let Scovill Technical Service suggest a better fin stock specification ...SCOVILL TRUSPEC ALUMINUM SHEET.

made better to bring out the BEST in your products

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The WELL-BEHAVED Aluminum Sheet

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SCOVILL MANUFACTURING COMPANY, Mill Products Division, 99 Mill Street, Waterbury 20, Connecticut. Phone PLaza 4-1171.

NEW

100-TON

UNIT

See

Booth

1005

DALLAS

SHOW

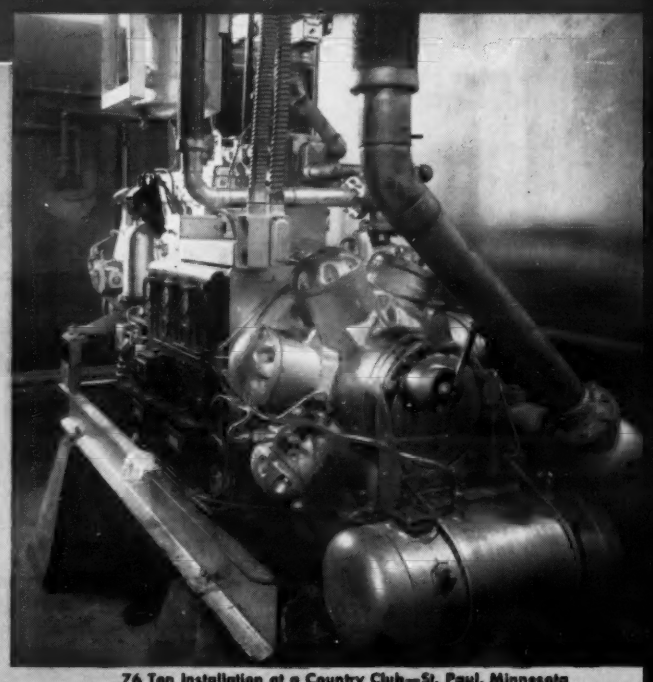
Call For Ready-Power NATURAL GAS Air Conditioning

and give your customers all these advantages:

- economical Natural Gas fuel
- low, low operating costs
- continuous, variable speed operation
- close temperature and humidity control
- automatic controls
- thermostat or push-button start

Fuel cost less than 1¢ per ton-hour

based on gas at 60c per 1000 cu. ft.



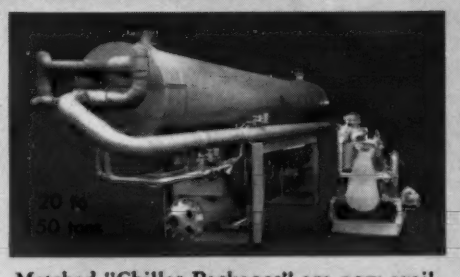
76 Ton Installation at a Country Club—St. Paul, Minnesota

Ready-Power Air Conditioning Units offer every advantage of automatic air conditioning—*at lowest operating costs.* Designed to operate efficiently on economical natural gas, Ready-Power Air Conditioning Units feature a unique system of capacity modulation for high efficiency *continuous cooling.*

Automatic controls allow continuous operation at varying speeds to meet all weather conditions and load requirements. This assures *precise control* of both *temperature* and *humidity* and maximum operating economy at all times.

Ready-Power Air Conditioning Units are adaptable to new or existing installations in sizes up to 76 ton. Multiple units of more than 150 ton capacity have proved highly successful.

Write for complete information.



Matched "Chiller Packages" are now available for all models. Factory piped, wired and tested, these Ready-Power "Packages" give you completely integrated refrigerant systems, require a minimum of installation work, reduce costs.

READY-POWER
SAVES AS IT SERVES

THE READY-POWER CO. 11231 FREUD AVE. • DETROIT 14, MICH.

Manufacturers of Gas and Diesel Engine Driven Generators and Air Conditioning Units; Gas and Diesel Electric Power Units for Industrial Trucks

1st Woman Wields Gavel over ARW Region 5; Airport Meeting a Hit

CLEVELAND—For the first time in the history of Air-Conditioning & Refrigeration Wholesalers Region 5, and ARW, a woman has been elected chairman.

Ila Unseld, partner, Heating & Cooling Wholesalers, Grand Rapids, Mich., was elected by acclamation to serve Region 5 during 1960-61.

Ray Lee, Lee Equipment Co., Detroit, was elected vice chairman, and Rod O'Flaherty, Refrigeration Supply, Inc., Cleveland, continues as secretary.

The election of officers took place at the Cleveland Hopkins Airport hotel, Cleveland.

"This was another first for the association," it was pointed out. "Facilities proved to be very favorable, and many delegates commented on the ease of getting to the meeting."

The next meeting of Region 5 is planned for the Pittsburgh airport in February.

It was also announced that a new name has been selected by members of Region 8. The name, Southwest Air-Conditioning & Refrigeration Wholesalers Association, Inc., was passed by members of Regional 8 at a recent meeting.

At the same time, a new constitution, corresponding with the ARW national constitution, was proposed and will be written by an incoming committee.

Elected to serve as officers for the region are: Carl Johnson, Johnson Supply, Houston, Texas, three-year term; Cad Jones, Jones-Newby Supply Co., Oklahoma City, vice-chairman, two-year term; Grady Daniel, Electromotive Corp., Dallas, secretary-treasurer, three-year term.

Engineers Joint Council Installs Cecil Boling as Vice President

NEW YORK CITY—Augustus B. Kinzel, vice president for research, Union Carbide Corp., and Cecil Boling, president of Dunham-Bush, Inc., manufacturer of air conditioning and refrigeration equipment, have been installed as president and vice president, respectively, of Engineers Joint Council, federation of 21 national engineering societies, representing 300,000 engineers.

Dr. Kinzel is a research metallurgist, pioneer in the theory of stainless steels and ferro-alloys, and responsible for major advances in welding. He is chairman, Engineering and Industrial Research Div., National Academy of Science, and past president of the American Institute of Mining, Metallurgical and Petroleum Engineers.

Boling, a recognized authority on heat transfer and holder of patents in that field, is a past president of the American Society of Heating, Refrigeration & Air-Conditioning Engineers.

G-B DUCT DISTRIBUTORS

AKRON, Ohio, The Asbestos Supply Co.
ALBANY, Ga., Industry Insulation Co.
ALBUQUERQUE, N. M., Mt. States Insulation Co.
AMARILLO, Tex., Morrison Supply Co.
ATLANTA, Ga., Reynolds Aluminum Supply Co.
The Thompson Company
AUGUSTA, Ga., Noland Company
BALTIMORE, Md., Leroy Insulation Company
BANGOR, Me., Eastern Glass Co.
BEAUMONT, Tex., Solar Supply Company
BILLINGS, Mont., Big Horn Supply, Inc.
BIRMINGHAM, Ala., Hall-Newsome Co.
Hart-Greer, Inc.
Reynolds Aluminum Supply Co.
Shook & Fletcher Supply Co.
BORGER, Tex., Western Chem. & Supply Co.
BOSTON, Mass., Homans-Kohler, Inc.
BRUNSWICK, Ga., Baker Bros., Inc.
BUFFALO, N. Y., Industrial Insulation Sales, Inc.
North Star Supply Company
CHAMPAIGN, Ill., The Lewie David Co.
CHARLESTON, S. C., Asbestos & Insulating Co.
Baker Bros. Co.
CHARLESTON, W. Va., Dunbar Metal & Sup. Co., Inc.
CHARLOTTE, N. C., Metal Service, Corp.
CHATTANOOGA, Tenn., Noland Co.
CHICAGO, Ill., E. C. Carlson Company
Culberg Asbestos & Cork Co.
CINCINNATI, Ohio, Van Dyke Supply Co.
CLEVELAND, Ohio, Ohio Asbestos & Ins. Co.
COLUMBUS, Ohio, Santeler Brothers
Culberg of Ohio
CORPUS CHRISTI, Tex., Precision Insulation Co.
DALLAS, Tex., Payne-Ladewig, Inc.
DAYTON, Ohio, A & H Supply Co.
DAYTONA BEACH, Fla., B&P Insulation Co.
DAVENPORT, Iowa, Republic Electric Co.
DECATUR, Ga., Lennox Industries
DENVER, Colo., Gene Wright Lumber Co.
DES MOINES, Iowa, Iowa Asbestos Company, Inc.
DETROIT, Mich., G. L. Johnston Co.
ENGLEWOOD, N. J., Englewood Supply Co.
EVANSVILLE, Ind., George Koch Sons, Inc.
FT. WORTH, Tex., Bracken Co.
GAINESVILLE, Fla., Baker Bros. Co.
GULFPORT, Miss., Paine Supply Co.
HOUSTON, Tex., Precision Insulation Co.
INDIANAPOLIS, Ind., Lyon Lumber & Supply
JACKSON, Miss., Paine Refrigeration & Supply Co.
JACKSONVILLE, Fla., Baker Bros. Co.
Eckles Distributors, Inc.
Ferber Sheet Metal Works
Florida Air Conditioners
Reynolds Aluminum Supply Co.
Southernair Distributors
KANSAS CITY, Mo., Central Supply Co.
Kelley Asbestos Co.
Superior Distributing Corp.
KNOXVILLE, Tenn., E. B. Copeland Co.
Holston Air Conditioning Corp.
LAKE CHARLES, La., Solar Supply Company
LAREDO, Tex., Anderson-Sturgis Company
LITTLE ROCK, Ark., Gunn Distributing Co.
555, Inc.
LOS ANGELES, Calif., Western Fibrous Glass Prod. Co.
LOUISVILLE, Ky., General Insulation & Roofing Co.
LUBBOCK, Tex., Anderson-Young Elec. Co.
Mechanical Equipment Co.
Morrison Supply Co.
MACON, Ga., Industry Insulation Co.
MARIETTA, Ohio, Asbestos & Insulating Co.
MEMPHIS, Tenn., A. T. Distributors, Inc.
MIAMI, Fla., Reynolds Aluminum Supply Co.
Southern Metal Prod. Co.
MILWAUKEE, Wisc., F. B. Dengel Co.
MINNEAPOLIS, Minn., Asbestos Products, Inc.
MYRTLE BEACH, S. C., Air Conditioning Supply
NASHVILLE, Tenn., Central Air Conditioning & Heating Co.
Reynolds Aluminum Supply Co.
NEWARK, N. J., Eastern Steam Specialty Co.
NEW IBERIA, La., Brooks Electronics
NEW ORLEANS, La., Eagle Asbestos & Packing Co.
Solar Supply Co.
NEW YORK, N. Y., Eastern Steam Specialty Co.
NORFOLK, Va., Automatic Equipment Sales Co.
NORTH PLAINFIELD, N. J., United Supply Co.
ODESSA, Tex., Morrison Supply Co.
Western Chemical & Supply Co.
OKLAHOMA CITY, Okla., Ball Dist. & Engineering Co.
OMAHA, Nebr., Cardinal Supply & Mfg. Co.
ORANGE, Conn., Insulation Supply Co.
ORLANDO, Fla., Baker Bros. Co.
PASSAIC, N. J., Ral Supply Co.
PHILADELPHIA, Pa., John F. Scanlan, Inc.
PHOENIX, Ariz., Kircher Asbestos & Rubber Co.
Thermal Equipment Co.
PITTSBURGH, Pa., Keystone Div. of Dravo Corp.
PORTLAND, Me., Eastern Glass Co.
PORTLAND, Ore., Western Fibrous Glass
RALEIGH, N. C., Reynolds Aluminum Supply Co.
RICHMOND, Va., Automatic Equip. Sales Co., Inc.
Reynolds Aluminum Supply Co.
ROCHESTER, N. Y., J. F. Burnett, Jr., Inc.
Rochester Oil Burner Company
ROCKFORD, Ill., Mott Brothers Co.
SALT LAKE CITY, Utah, Bullough Asbestos Sup. Co.
SAN ANTONIO, Tex., San Antonio Machine & Supply
SAN DIEGO, Calif., Western Fibrous Glass Prod. Co.
SAN FRANCISCO, Calif., Western Fibrous Glass Prod.
SAVANNAH, Ga., Baker Bros.
Reynolds Aluminum Supply Co.
SEATTLE, Wash., Western Fibrous Glass Prod.
SHREVEPORT, La., Frith Sales Co.
SOUTH BEND, Ind., Conditioned Air, Div. of Place & Co.
ST. PAUL, Minn., Asbestos Products, Inc.
SULLIVAN, Ill., Lewie David, Inc.
SYRACUSE, N. Y., Burnett Process, Inc.
TALLAHASSEE, Fla., Baker's, Inc.
TAMPA, Fla., Eagle Roofing & Art Metal Works, Inc.
TULSA, Okla., Ball Distributing & Engr. Co.
VALDOSTA, Ga., Baker Bros.
WASHINGTON, D. C., Walter E. Campbell Co.
WINSTON-SALEM, N. C., Air Conditioning Supply

FLORIDA CONTRACTOR REPORTS:

"G-B Duct cut our installation time almost in half"

"I'm convinced this new 'prefab' glass fiber duct is the best duct material I've ever used," reports Mr. Elliott Brandon, air conditioning contractor for a new 500-unit housing project in West Hollywood, Florida. "We've found G-B DUCT cuts installation time, per unit, almost in half! With reductions like this we're able to uphold our reputation for doing professional work and still maintain a competitive edge pricewise."

ECONOMICAL, FOOLPROOF INSTALLATION

Although somewhat higher in initial cost, G-B DUCT can be applied so simply and quickly that completed costs soon come in line with — and usually undercut—those for conventional metal ducts. The key lies in no preassembly work. There's no scoring, no folding. G-B DUCT comes in 6′ ready-to-use sections, in sheet metal pipe diameters up to 18". Sections fit snugly and swiftly together with metal sleeves and vapor barrier tape. Elbows and T fittings are also easily fabricated with a knife and factory-supplied templates.

PERFORMANCE IS "BUILT-IN"

Maximum thermal protection and sound absorption are "built-in" features, because G-B DUCT is the first and only round, prefabricated duct for heating and air conditioning that is made 100% of glass fiber insulation. It is the only duct of its kind to carry an Underwriters' Laboratories label, and therefore meets all FHA requirements! Its uniformly thick glass fiber walls are covered with an air-tight plastic vapor barrier sleeve for positive protection against sweating and moisture build-up. As permanent as glass itself, G-B DUCT will not rust, corrode or deteriorate in any way.

POPULAR FOR MANY APPLICATIONS

In addition to its widespread popularity as a residential duct, G-B DUCT is equally suited for commercial and institutional air conditioning and heating systems. And rightly so, for its "built-in" quality performance and simple, economical installation make it the ideal duct for "zone" units as well as for use as "run-outs" in central units.

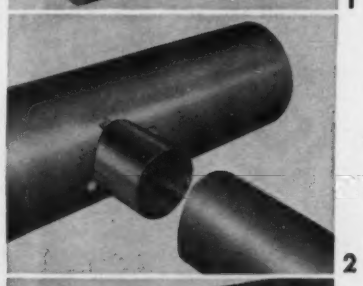
WINS ENTHUSIASTIC APPROVAL

Air conditioning contractor Elliott Brandon is typical of the many contractors and builders across the nation who are enthusiastic about the "quality plus economy" features of G-B DUCT. "Pleased to report G-B DUCT is performing satisfactorily," says the contractor on an 800-unit housing project. "Comparative cost studies show G-B DUCT doubles our manpower output," reports another on a 300-home development.

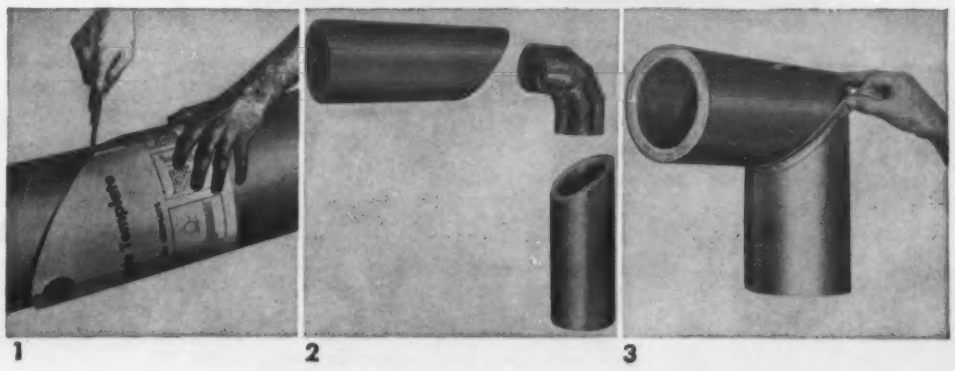
For detailed installation instructions, see your nearest G-B distributor — listed in adjoining column.

GUSTIN-BACON Mfg. Co. gb
218 W. 10th St., Kansas City, Mo.

INSTALLING STRAIGHT RUNS
Simply insert metal sleeve (above) at joint, butt two sections of duct together and seal with vapor barrier tape.



INSTALLING RUN-OUTS
1—Using factory-supplied template, cut one end of run-out to fit flush against side of main duct. 2—Cut the side of main duct, using sheet metal fitting as a template and insert metal sleeve. 3—Slip run-out onto locked metal sleeve until flush against main duct, then wrap tightly with vapor barrier tape.



INSTALLING 90° TURNS
1—G-B DUCT is easily cut at 45° angle with factory-supplied template or saw and miter. 2—Insert right angle metal elbow into mitered ends of duct. 3—Push tightly together and seal with vapor barrier tape.

Furnace and Cooling Specialists

More Types of Firms To Be Eligible For Fedders Dealer Trip Program

MASPETH, N. Y.—With the introduction of its first line of warm air furnaces and remote air conditioners, Fedders Corp. announced that warm air heating and air conditioning specialists will now be able to participate in the firm's dealer trip program.

The program, which started in 1951, has resulted in more than 20,000 trips to vacation spots throughout the world.

Claude C. Kirk, sales manager of Fedders' Central Residential and Commercial Air Conditioning Dept., said that in the past Fedders trips have involved primarily window air conditioner retailers since Fedders central line consisted of only self-contained equipment.

"With the introduction of a complete line of remote units, one a factory-charged system, as well as 20 gas and oil-fired furnaces, we expect to have a large number of warm air heating and air conditioning specialists taking the trip with us this year," said Kirk.

The countries to be visited by Fedders dealers on the trip next fall are yet to be announced by the firm.

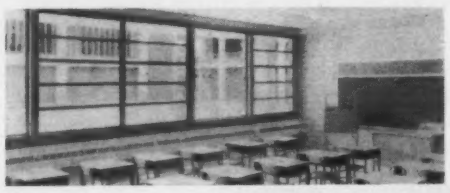
Last year, 3,800 dealers spent vacations in Acapulco, Mexico, and another 600 had their vacations in Rome, Naples, and Capri, Italy. In the past they have visited such places as Paris, Cannes, Nassau, Jamaica, Dominican Republic, and Bermuda.

Hess, Greiner & Polland To Represent Recold In Parts of Nev., Calif.

LOS ANGELES — Hess, Greiner & Polland is now the sales representative for all of Recold Corp.'s air conditioning products in northern California and northwest Nevada, it was announced by H. T. (Hy) Jarvis, president of Recold.

Gilbert T. Lord, a member of the Hess, Greiner & Polland organization for 13 years, has been chosen to head up the new northern California sales organization, with offices at 1485 Bayshore Blvd., San Francisco 24.

Lord will be assisted in the new office by Donald R. Dickson, who will serve as a sales engineer. Dickson is a graduate engineer with 11 years' experience selling air conditioning equipment.



TYPICAL classroom is heated with FOT radiation.

CAFETERIA is heated with Dunham-Bush comfort conditioners and uses other D-B equipment for food preservation.

6 Types of Products Needed To Provide Comfort, Food Preservation In School

BELLE CHASSE, La. — The diverse heating, ventilating, and refrigeration requirements in modern schools is well represented in the new four-building Belle Chasse high school here while the widely ranging comfort and food preservation requirements are met with the application of six types of Dunham-Bush products.

One building, the gymnasium, is heated with "C" type unit heaters and another, the auditorium, is heated with "AH" type air units.

D-B "Comfort Conditions" heat the school cafeteria, and the walk-in refrigerator and freezer services are equipped with a "wall jet" unit cooler and electric defrost low tempera- units.

Comfortable conditions for 40 classrooms when the temperature drops is provided with "FOT" radiation. The locker room is heated with "H" type unit heaters, the corridors and library with "M" type cabinet unit heaters both recessed and free standing.

Building team responsible for Belle Chasse high school included Burk, Lebreton & Lamantia, architect and engineer; Alfred R. Salzer, mechanical engineer; Frank A. Dorsa & Co., mechanical contractor.

Drayer-Hanson Meeting Will Coincide with Southwest Exposition

LOS ANGELES—Simultaneously with the 2nd Southwest Heating & Air Conditioning Exposition in Dallas, Feb. 1-4, Drayer-Hanson will hold a regional sales convention at the Statler-Hilton there.

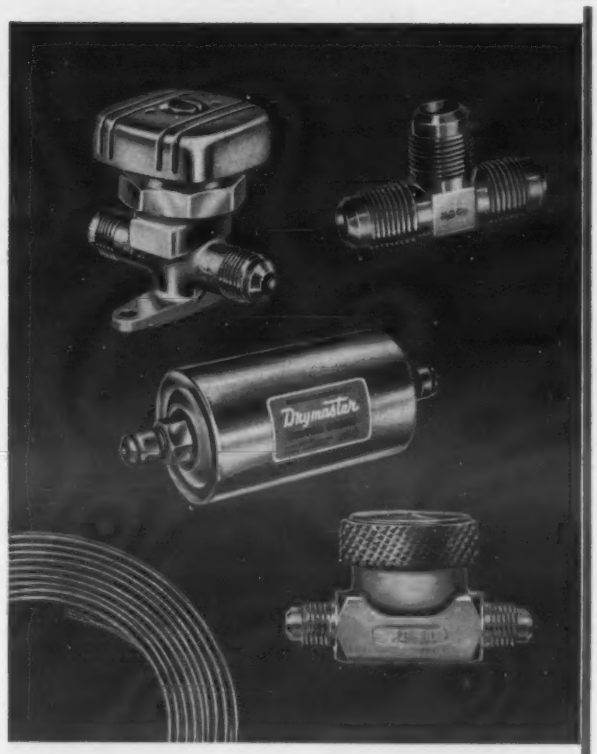
Sales Manager Ivr. Secord said the firm's five separate sales agent groups in Texas will participate, plus a score or more of agent groups from other South and southwestern sections.

M & T Co. Awarded 4 Air Force Contracts

PHILADELPHIA—The award of four Air Force contracts to The M & T Co. here has been announced by the firm.

One contract is for the maintenance and operation of the central heating plant and air conditioning system at Dover Air Force Base, Dover, Dela. The M & T company will also be responsible for the maintenance and operation of the central heating plant at K. I. Sawyer Air Force Base, Gwinn, Mich.; the central heating plant and heating system at Glasgow Air Force Base, Glasgow, Mont.; and the central heating plant and primary distribution system at Wurtsmith Air Force Base, Oscoda, Mich.

MUELLER BRASS CO. ®



a new symbol
for all these
QUALITY PRODUCTS
for refrigeration and
air conditioning from
ONE dependable
source

This distinctive corporate symbol is a new addition to the American business scene and will be found on the many diversified products made for the refrigeration and air-conditioning industries by the Mueller Brass Co. of Port Huron, Michigan . . . your one dependable source for such products as refrigeration valves, driers, fittings and accessories.

MUELLER BRASS CO.
PORT HURON 13, MICHIGAN

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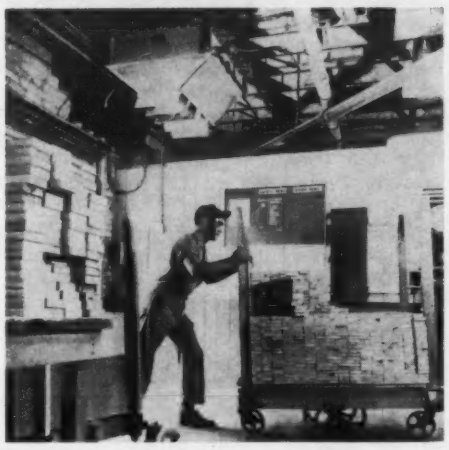
High Velocity Heaters over Doors Muzzle Bite of Inrushing Cold Air



HIGH VELOCITY heater above shipping room door at American Furniture Co. plant provides comfortable temperature for employes working near open door. Negative pressure in plant complicated problem.

MARTINSVILLE, Va. — A familiar industrial problem, the influx of chilled air through open shipping doors, has been solved at American Furniture Co. here by installation of high-velocity door heaters.

The company's Plant 2 and Plant 5 face each other across a street, with heavy traffic between them. This means that shipping doors in each plant must be opened frequently even in cold weather. The resulting cold air flow increased heating costs, threatened exposed raw materials, and adversely affected the efficiency of employes working near the doors.

The problem was aggravated by dust collection system exhaust which creates a negative pressure inside each building. This slight vacuum adds to the velocity and volume of air admitted when shipping doors are open.

After a study of several possible solutions, American Furniture installed high-velocity L. J. Wing door heaters. A heater was installed above and just in front of each 8 by 8-ft. door, with its discharge 8½ ft. above the floor. A fan, blowing air down over steam-heated coils, enables each heater to produce a curtain of warm air downward to the floor. This tempers the incoming air, keeps raw materials safe, and keeps working areas near the doors at comfortable temperatures.

Coils are individually replaceable, so that damage to a coil does not necessitate replacing an entire heating section. Steam at 6 to 12 p.s.i. is supplied from the plant's low-pressure steam system.

At American, where contemporary furniture for living, dining, and bedrooms is manufactured, the heaters are operated continuously in cold weather. Commonly, installations of this type are equipped so that a heater starts and stops automatically when a door opens and closes, or has thermostatic control to continue the heat after a door closes, until temperature in the door area has returned to normal.

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For Better Heating-Cooling Design

Group Paves Way for Research on West Coast Climate, Construction

CLEVELAND — First step was taken recently in a contemplated west coast research investigation into the effects of climatic factors and construction practices involved in the design of warm air heating and air conditioning systems.

Herbert T. Gilkey, technical director of the National Warm Air Heating & Air Conditioning Association, recently spent 10 days in San Francisco and three days in Los Angeles surveying heating systems.

While in San Francisco, Gilkey joined with nine representatives of the heating and cooling industry to plan the scope of the research inquiry.

Participating were:

Jack Wolff, General Controls Co., Glendale; Art Horne, Day & Night Mfg. Co., La Puente; George Aronovsky, Tuck-Aire, San Francisco; Stan Stafte, Utility Appliance Corp., Los Angeles; Brandon Finney, Customaire, San Francisco; Dar Knowles, Warm Air Heating Institute, San Francisco; Robert Boyer, Minneapolis-Honeywell Regulator Co., San Francisco; A. E. Baak, CamStat Inc., Los Angeles; Roland Taylor, Fraser & Johnston Co., San Francisco.

The committee attempted to identify, specifically, the factors to be evaluated in the research investigation.

Temco Shows '60 Line, Awaits No. 2 Million

NASHVILLE, Tenn.—Temco, Inc. held its annual national sales meeting here using the theme "Two for the Money."

Sales representatives from all over the country attended the two-day session to view new product developments and the merchandising program for 1960. They saw a new line of unvented heaters, a new floor furnace with a return air duct and fan package, and a newly-styled low boy furnace.

Temco salesmen were told plans to celebrate the sale of Temco's 2,000,000th unit which will be manufactured and sold in 1960. Temco will offer consumers, dealers, and distributors opportunities to obtain a wide variety of gifts and premiums.

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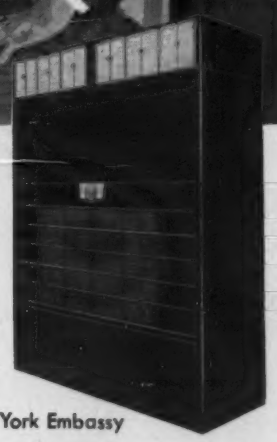
NO OTHER AIR CONDITIONER OFFERS SO MANY IMPORTANT SAVINGS BOTH NOW AND LATER!



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SAVE...by quoting on a pay as you go basis! The important areas can be air conditioned first and additional units added as budget permits. This permits a rock-bottom base quotation that would be vital on many jobs.

SAVE...the customer 15% or more on operating cost with York's step-capacity operation! Each unit contains as many as 4 independent compressors. As heat increases, an additional compressor swings into action...cuts off as heat decreases. Customer pays only for the cooling he needs!

There's no interruption of business or loss of operating revenue, either, with York Packaged Units. And individual units can be turned off when not in use, to cut operating costs even more! Write today for full details!

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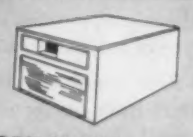

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Practical Interpretation of Detroit Refrigeration Code Given by Official

By Frank J. Versagi

DETROIT — What about installing non-UL approved air conditioning units? Who is responsible for unit accessibility for service and and inspection? What is the rule concerning extension of window units over city property? When is it permissible to install an air-cooled condensing unit at the side of a house?

Practical, understandable answers to such questions as these were given the local Refrigeration Service Engineers Society by Hugh J. Goslin, supervising inspector, Bureau of Safety Engineering, City of Detroit. Actually reading sections of the code only when absolutely necessary to obtain specific definitions, Goslin spent most of the evening conducting a question and answer session on Detroit Refrigeration Ordinance No. 353-F. Goslin's comments are of practical significance to contractors, servicemen, and city officials everywhere concerned with their own code and its interpretation.

Further, the points covered offer a guide to good installation practices for all air conditioning contractors, regardless of code considerations.

ON THE INSTALLATION OF NON-UL APPROVED UNITS: "By the very nature of the industry, Underwriters' Laboratories cannot keep up with the constant changes in models and designs produced by the refrigeration and air conditioning manufacturers. As a result, there may be several months delay before a specific unit is listed. In practice, some 20% of the units shipped into Detroit last year were not listed when they came in. None of this equipment can be installed legally without prior city approval.

"Our department will arrange for inspection and testing of the unit in cooperation with the proposed installer. Once we have tested and approved the unit of a new model, any other contractor may install that model, but it is his responsibility to call the department to determine the status of any non-UL listed equipment."

Goslin explained that Underwriters' list is used by so many city authorities because, of all the testing laboratories, it is the "only one which provides follow-up service." Follow-up service is the periodic checking of production units to assure that they meet the standards passed by the unit submitted to UL for initial approval.

"Normally, on non-approved or non-listed equipment, the distributor can arrange with the manufacturer to pay the $40 testing fee we impose," the city official offered. He suggested that air conditioning producers consider the joint establishment of an industry test laboratory as was done by furnace producers for burner testing.

ON RESPONSIBILITY FOR ACCESSIBILITY: "The installing contractor is responsibile for assuring accessibility on a unit for service and inspection." Especially a problem with air-cooled units mounted on a roof, accessibility must include provisions for ladders and trap doors which must be left on the premises. "Even where one unit is available by crossing another man's roof, a ladder must be provided for the unit, since it is against our policy to cross another owner's roof to get to the unit to be inspected."

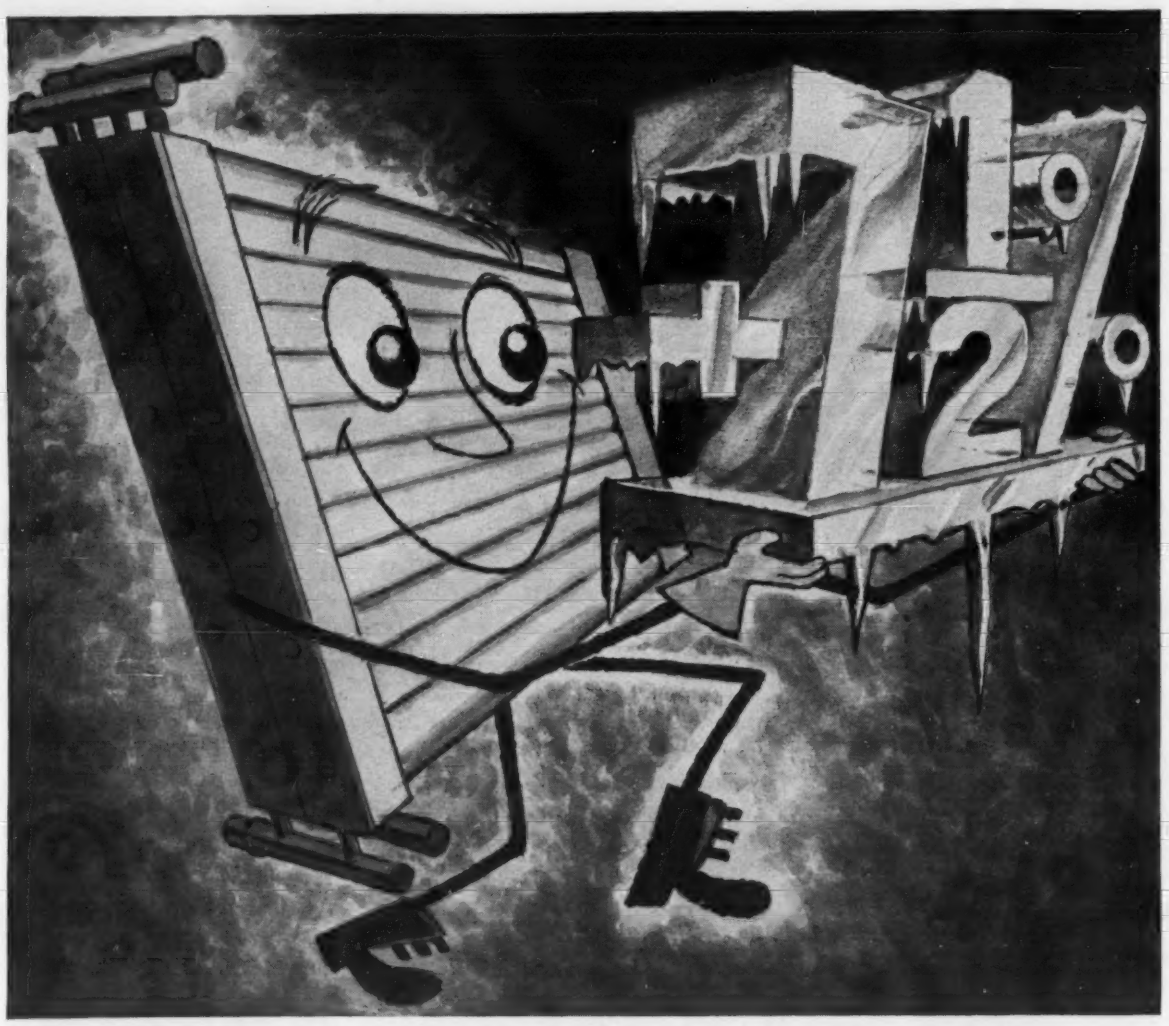
Permanent steel ladders, Goslin said, may stop high enough off the ground to prevent children or unauthorized personnel from reaching it readily. In such instances, a small ladder kept on the premises can be used.

ON WINDOW UNIT OVERHANG: "Regardless of size, no window unit is allowed to encroach on city property within 11 vertical feet at the front of the building and within 15 vertical feet at the back of the building. Above these heights, a permit must be taken if the window unit is to extend beyond the building face."

Goslin pointed out that in many cases the sidewalk immediately adjacent to a building may be private property, not city propery. Where there is any doubt, he suggests a call to the Department of Public Works. "Give the building location and address and within minutes the department can tell you where the lot line is."

AIR-COOLED UNITS ALONGSIDE THE HOUSE: "Never install an air-cooled condensing unit along the side of a house, no matter how wide the lot, no matter how far away the next house." In Detroit, over 100 units so installed have had to be removed. "All it takes is one complaint from an irate neighbor to call attention to this encroachment on side yard areas. Window units may be installed in the side windows of a house, so long as they do not extend more than 12 in. beyond the face of the wall. While this is easily accomplished with modern units, attempts to install older units flush inside always result in too much overhang outside."

ON APPLIANCE STORES AND UNLICENSED INSTALLERS: Goslin was questioned on the alleged practice of some appliance outlets to use unlicensed installers or to use employes of licensed contractors for part time work. "Appliance stores



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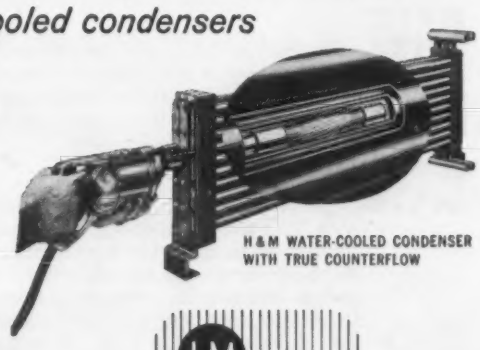
Featuring double-tube design, seamless copper tubing and brass headers, H&M condensers are available in ⅓ to 25-ton capacities. All are U/L approved, and can be used singly or in multiples on racks. Ask your H&M refrigeration wholesaler for complete information, or write Halstead & Mitchell Co., Bessemer Building, Pittsburgh 22, Pa.



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must use licensed installers for anything bigger than 1 hp.," he answered. "When a man takes a job on the side, even though his employer is a licensed contractor, he is working against the law. He can't get a permit for those jobs requiring one and should be reported if noticed doing so."

ON PERMITS: "Theoretically, permits should be obtained before the installation. In practice, some of the information called for—as the pounds of refrigerant on remote jobs—is not available until after the unit is in. Therefore, there is a grace period of a couple days."

Because some permits were being used by unauthorized people, new permit forms just developed by the City will require the signature of the contractor or designee to prevent use of the license number by any one other than the proper personnel.

"If limited by license to 7½-ton installations, you may install any multiple units so long as no single condensing unit is larger than 7½ tons. Thus, you could make a 25-ton installation if the units were two 7½'s and two 5's."

ON ROOF INSTALLATIONS: "Any roof installation, no matter how small, requires a permit from the Building Bureau. For water-cooled installations, three sets of mechanical plans must be submitted—for building, electrical, and plumbing inspection. On air-cooled installations, it may be sufficient to provide a diagram of the building and its location, so long as all pertinent data is available which will allow the department to determine that the roof will support the installation."

ON RELIEF DEVICES: "So many times, after a fusible plug has blown, the serviceman fills the plug with 95/5 solder instead of taking the few minutes needed to detach and replace the blown accessory with a proper one. We have looked at so many fusible plugs and solders that it only takes a quick look to let us know this has been done. Lacking that, merely scraping a knife blade across the solder will tell us if it is the correct soft solder or not."

Critical charge-units, with no pressure vessel, need no relief devices.

ON SURGE TANKS: Answering an objection to the requirement that a surge tank meet ASME standards for pressure vessels, Goslin said, "True, there is no pressure to worry about in the surge tank when the unit is operating. But we are interested in what happens if the unit is off and there is a fire. Then there will be pressure, plenty of it."

ON ALTERATION and CONVERSION JOBS: If existing methyl chloride jobs are moved to another site, the units must be upgraded to present standards for refrigeration equipment. If the unit is merely moved to another spot in the same store,all new joints must be brazed and all relief devices for units containing over 6 lbs. of methyl chloride must be vented to the outside.

"Alteration permits are needed:

if any pipe up to 1½ in. over 20 ft. long is removed or added;

if a pipe of any length over 1½ in. is altered;

if a compressor, condenser, or pressure vessel is changed;

if the refrigerant is changed, as from Methyl Chloride to R-12."

Hal Clay Resigns Posts To Devote Full Time as Manufacturers' Agent

LOS ANGELES — After 20 years' association with Authorized Supply Corp. of Los Angeles as president, Hal Clay has sold his interest in the company, effective Feb. 1, and also Brea Supply Co., Refrigeration Service, Inc., and Authorized Supply of Arizona, Inc., both in Phoenix and Tucson, to Robert E. Shaw & Associates.

The corporate names will be retained, according to Clay. Shaw and his associates have been with these companies for a number of years.

Clay said he has taken this action so he can spend all his time as a manufacturers' representative.

Porterfield Heads Slate Of Tarrant County Assn.

FORT WORTH, Texas—W. R. Porterfield of Lone Star Gas Co. has been elected president of Tarrant County Air Conditioning Association, Inc. here.

William P. Sweaney is first vice president; A. E. "Boots" Brown, second vice president; and Lewis E. Crow, secretary-treasurer.

Directors include Bill F. Boyd, E. Stanley Keese, M. N. Kaastad, R. S. Phillips, retiring president, and Col. Edwin D. McCoy, executive secretary.

Low Cost Vapor Barrier Slated for Market by American Sisalkraft

ATTLEBORO, Mass.—American Sisalkraft Corp. announced that it is prepared to produce a complete family of low cost, vapor barriers which "combine outstanding appearance with a unique group of physical properties—including permanent fire resistance."

Expected to be employed in the building, construction, heating, ventilating, and associated fields, the first of this new family of barriers consists of aluminum foil and kraft paper bonded together with a flame extinguishing adhesive and reinforced with fiber glass strands.

This basic kraft to foil "Pyro-Kure" can be supplied with various weights of paper, thickness of foil, and amounts of reinforcement, and also in foil-to-embossed kraft, either black or white, and in foil to foil barriers, it was stated. Other combinations will soon be made available.

Applications are expected to be as insulation facings for lining of pipes and ducts, and for general barrier usage in commercial and industrial construction.

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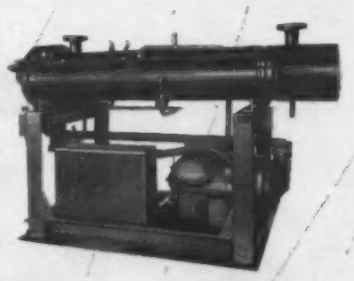

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Soldering—Brazing Alloys

Codes and Practices In Pipe Joining

By Frank J. Versagi

DETROIT — At the recent showing of a new condensing unit, several observers commented on the use of 95/5 tin-antimony solder on the refrigerant piping joints. Comments were to the effect that such joints are disallowed by most city building codes and by the ASA B9 Safety Code for Mechanical Refrigeration. "Only silver solder or brazing alloys are permissible on such units," was a frequently expressed opinion.

The manufacturer took exception to this belief, holding that "too many codes are being promulgated by word of mouth, rather than by an actual reading." He cited a couple cities where contractors had the feeling that 95/5 was prohibited but where a reading of the code showed such a prohibition is not intended.

"Further," the manufacturer continued, "the use of 95/5 **must** be permitted on close-coupled, factory-assembled units for purely mechanical convenience reasons. Then, too, isn't it rather illogical to insist on silver brazed pipe joints when components in the unit, such as a drier or valve, may contain soft soldered joints?"

This incident exemplifies the confusion in the industry over which joining alloys are permissible and where. NEWS investigation shows diverse practice by manufacturers, and uneven knowledge by city officials. Discussions with original equipment manufacturers, city officials, component suppliers indicates a definite trend toward the adoption of the provisions of ASA B9, but the situation is far from fixed.

Some city engineers and inspectors, for example, stated frankly that they have no applicable codes and request that they be sent copies of this article when it is published. "I find such a situation hard to believe," states Frank J. Drogosch, chief safety engineer, City of Detroit. "What is more likely, your interviewee has no knowledge of a refrigeration code, as such, but the provisions are almost certainly included in the city's building code which is frequently adopted from recommendations made by some group like the Building Officials Conference of America."

Sections of the safety code pertinent to this discussion (ASA B9.1—1958): Sec. 2.4 **Brazed Joint,** for the purpose of this code, is a gas-tight joint obtained by joining of metal parts with alloys which melt at temperatures higher than 1,000° F. but less than the melting point of the joined parts.

Sec. 2.57 **Soldered Joint,** for the purpose of this code is a gas-tight joint obtained by joining of metal parts with metallic mixtures of alloys which melt at temperatures below 1,000° and above 400°.

Sec. 9.3.5 Sweat joints on copper tubing used in **refrigerating systems** containing Group 2 or Group 3 **refrigerants shall** be brazed joints. Soldered joints shall not be used in such refrigerating systems.

Sec. 12.1 **General.** Every **refrigerating system shall** be protected by a **pressure-relief device** unless so constructed that pressure due to fire conditions will be safely relieved by some part of the system.

At least by omission, the use of 50/50 tin-lead solder is not at all allowed, with the exception that this alloy may be incorporated into the pressure-relief device mentioned in the last section cited. Yet component suppliers—at least until very recently—have used 50/50 solder for joints in such items as driers, valves, and similar accessories, this indicating that thousands of units are so equipped at the present time.

OEM people, for the most part, have ceased using this low melting alloy and use 95/5 as a minimum and usually go to the silver solders or the phos-copper alloys, but field recommendations vary.

Some Typical Views

In view of this diversity of opinion, it is impossible at this time to offer a completely authoritative summary of codes and practices concerning the techniques of making refrigerant line joints. Typical quotations from several of the discussions, however, will illustrate the general situation.

●

CITY OF DETROIT—Detroit Refrigeration Ordinance No. 353-F adopts as law the American Standard Safety Code for Mechanical Refrigeration, ASA B9.1—1958.

In Sec. 8.1 of the Detroit code: "Soldered joints used on copper tubing used in all refrigerating systems, except approved self-contained units containing six (6) pounds or less of Group 1 refrigerant, in buildings for institutional and public assembly uses, and in refrigerating systems containing more than twenty (20) pounds of refrigerant gas in buildings of other use groups shall be fabricated with solders or alloys having melting points of not less than 1,000° F."

Silver bearing alloys (melting above 1,000°) are not only suitable for joints in any refrigerating system, but are mandatory for all systems except those exempted in Sec. 8.1.

The 95/5 solders (melting above 400° but under 1,000°) are permitted only for joints in the refrigerating systems exempted in Sec. 8.1.

The 50/50 solders (melting below 400°) are not permitted for joints of any refrigerating system except where utilized in one place as a means of pressure relief due to fire conditions.

●

ST. LOUIS—The present St. Louis building code does not specify any grade or type of solder to be used in making up joints on refrigeration piping.

A Building Code Committee has practically completed a study which will probably recommend the use of the ASRE Code for Refrigeration. (Note: This is the ASA B9 code.)

●

BALTIMORE — Soldered joints on copper tubing used in refrigerating systems containing Group 2 or Group 3 refrigerants shall be made with solders or alloys having melting points not less than 1,000° F.

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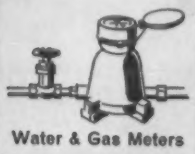
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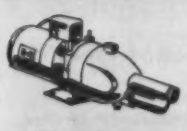
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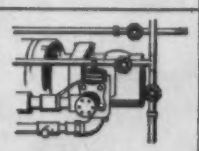
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HUSKY BRASS VALVES

NIBCO INC.

NIBCO INC., Dept. K-6202
Elkhart, Indiana

A report from our maintenance force indicates convenience and good performance on 95/5 with the halogenated hydrocarbon refrigerants.

●

TULSA, Okla.—We do not permit the use of 50/50. The tin-antimony solder 95/5 and silver bearing brazing alloys are used.

●

LOS ANGELES—Se. 95.4802 (j) of the refrigeration code specifies that every refrigerant tubing joint and connection shall be an approved, flared, lapped, or swaged brazed joint.

Exception: Soldered joints may be used to connect any valve to adjoining piping in any refrigeration system containing any Class 1 refrigerant other than carbon dioxide.

(Editor's Note: This exception takes practical cognizance of the fact that many accessories may be damaged if they are joined to pipes with high melting alloys. Producers of expansion valves, driers, sight glasses, moisture indicators complain of the damage done to their products if care is not taken when joining them to the line.)

Many cities, such as Philadelphia, Denver, Wichita refer to the ASA B9 code.

Equipment manufacturers almost universally avoid the use of 50/50 solder except for such purposes as joining the capillary to the suction line or making drain pan connections. Even accessory suppliers are now moving away from this solder in all but a few cases, although —as one producer pointed out— there have been millions of compressor valves, driers, and the like produced with 50/50. For the most part, manufacturers are using 95/5 and the silver brazing alloys.

●

JANITROL—In factory assembly of our high sides we use only silver-bearing brazing alloys. In the field we recommend that connections between high side and evaporators be made with 95/5 because we feel that the installer is much more likely to get a trouble-free joint with that material than if he tries to use the much higher melting silver-bearing brazing alloys. We recommend entirely against the use of any 50/50.

●

KELVINATOR—We do not recommend the use of 50/50 in joining refrigerant tubing. We do not use 95/5. Silver bearing alloys are used for all our copper-copper, copper-steel, and steel-steel tubing joints. In addition, we use a copper-silver-phosphorus brazing alloy for some copper-copper joints. For field installations we recommend a silver alloy.

Classification of Refrigerants

When reference is made to the Group number of a refrigerant, the reference usually is to a classification according to the ASA B9 Safety Code. According to that code, there are three groups of refrigerants.

Group 1: considered neither toxic nor flammable. This group includes carbon dioxide and the fluorinated hydrocarbons R-11, 12, 21, 22, 114, etc. It also includes some of the proprietary mixes as the "Carrene" group.

Group 2: toxic, but not necessarily flammable. In this group are ammonia, methyl and ethyl chlorides, dichloroethylene, and sulfur dioxide. As an example, ammonia is not normally flammable but may form an explosive mixture under certain conditions.

Group 3: flammable, and may also be toxic. This group contains the petroleum gases —butane, ethane, propane, ethylene, isobutane.

* * *

Not so frequently referred to is the classification of refrigerants according to Underwriters' Laboratories. In this system, there are six groups classified by their lethality.

WESTINGHOUSE — We use silver-bearing brazing alloy on all copper-steel joints and phos-copper on all copper-copper joints. We make similar recommendations for field-assembled installations involving our equipment.

●

MATHES—We use no soft solder of any type. All piping and refrigerant line connections are made with brazed joints. In places where vibration will be encountered, we use a low silver content phosphor bronze alloy.

●

AIRTEMP — Tin-antimony 95/5 is not used in the plant, but is recommended as an alternate method of joining suction and discharge lines on split residential systems. Copper-silver-phosphorus alloy is used on plant and field copper-copper joints. Silver-zinc-cadmium type alloy is used for copper-brass and non-ferrous to steel joints.

●

ACME INDUSTRIES — For steel-copper joints:

a) 35 % silver brazing alloy rod with hand-applied flux

b) 35% silver brazing alloy rod with gas flux

c) low fuming copper base alloy brazing rod with gas flux

d) same as (c) but with hand-applied flux

e) 45% silver brazing alloy powder with paste flux.

Alloys and techniques vary depending on location and position, quality and fit, and proximity of other joints.

For copper-copper joints:

a) Sil-Phos usually without additional fluxing agent

b) 35% silver brazing alloy rod with hand-applied flux where lower brazing temperatures are desired because of proximity of other joints or to prevent excessive annealing or oxidation of copper parts.

For brass-copper joints:

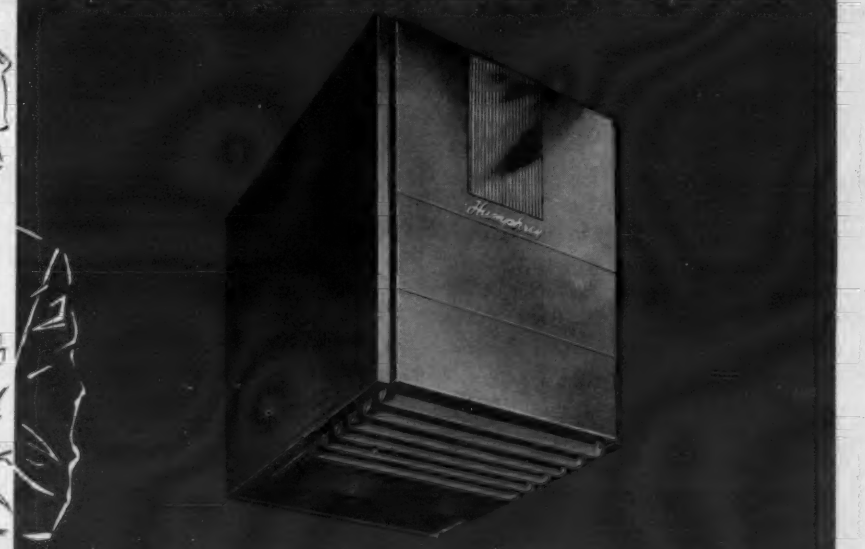
35% silver brazing alloy rod with hand-applied flux.

MINERALLAC
STEEL
Beam Clamps
for Mounting Hangers
on I-Beams

Mounts Minerallac hangers No. 0 to No. 6 on I-Beams without necessity of drilling holes. Have ½-20 tapped holes. Fits beam flanges up to ½" thick. Low cost. Send for literature.

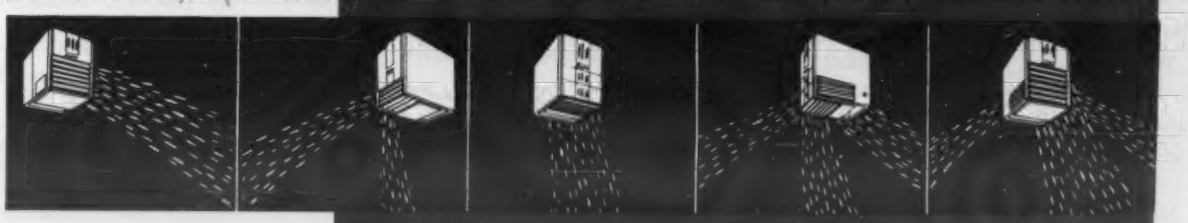
MINERALLAC ELECTRIC COMPANY
25 N. PEORIA ST. • CHICAGO 7, ILL.

NEW
MD
Humphrey BY ARKLA
MULTI-DIRECTIONAL



AUTOMATIC GAS UNIT HEATER

FIRST to deliver Warm Air STRAIGHT DOWN and from front and sides



The MD is the FIRST unit heater with interchangeable and optional LOUVERS that can be installed on the job, to provide the MOST EFFECTIVE air circulation for each individual installation.

The MD is equipped with top-mounted fan, unique "open-top" heat exchanger, and completely enclosed controls. May be ducted to use 100% outside air for combustion, or installed in batteries of several units using same piping, wiring and vent.

Receive BETTER HEATING with FEWER HEATERS ... with a HUMPHREY MD ... available in 11 sizes, 40,000 to 270,000 Btu.

OTHER ARKLA GAS APPLIANCES

Humphrey
DIVISION
AIR CONDITIONING CORPORATION
GENERAL SALES OFFICES
SHANNON BUILDING
LITTLE ROCK
ARKANSAS

DEALERSHIPS AVAILABLE IN CERTAIN AREAS • WRITE HUMPHREY DIVISION • ARKLA

SEE Arkla's booth at 2nd Southwest Heating & Air Conditioning Exposition

They'll Do It Every Time

by Jimmy Hatlo

I WAS FIRST SERGEANT OF SPECIAL SERVICES--HAD TO MEET ALL THE HOLLYWOOD DOLLS WHO CAME TO ENTERTAIN THE TROOPS--
I HAD A STAFF CAR AND A CHAUFFEUR--THE GENERAL USED TO GET CARSICK, SO ANY BIG SHOTS HAD TO BE MET--I DID IT---
THERE WAS THIS RICH WIDOW IN MARSEILLES--WELL--SHE USED TO GIVE PARTIES FOR THE BOYS--
TOPPIN' ONE ANOTHER ABOUT WHAT SOFT JOBS THEY HAD IN THE ARMY--AND WHEN THEY WERE DOING THE MUSKET BIT THEY WERE ALWAYS LYING ABOUT WHAT BIG SHOTS THEY WERE AT HOME---
YESTERDAY IT WAS HOW THEY WON THE WAR SINGLEHANDED--CHURCHILL NEVER MADE A MOVE WITHOUT CONSULTING THEM--!
THEIR SALES ARE 4F HERE. COMES THE END OF THE MONTH, THEY'LL BE MUSTERED OFF THE OL' PAY ROLL---
ENJOYING THE AUTO SALESMEN'S DAILY BULL SESSION.
THANX AND A TIP OF THE HATLO HAT TO GEO. L. KERR, FT. RILEY, KAN.

Heating Shouldn't Be Taken For Granted; It Needs Closer Tolerances In Installation Practices

NOWADAYS heating and cooling have teamed up to provide a healthful indoor environment all the year around—comparable to a balmy 72° summer morning.

This fact is being demonstrated dramatically every day in model homes which already have been viewed by an estimated 10,000,000 visitors.

Insofar as the heating system is concerned, those ten million prospects were educated to expect warm floors, just a slight difference in room air temperature from floor to ceiling, steady-as-she-goes indoor weather from room to room, and a complete absence of perceptible air movement all through the house.

Why warm floors? They are needed to eliminate adult cold feet and health hazards for small children. Surface temperature of the floors should be about 68 to 70°. Floors warmer than 80 to 85° will produce discomfort and abet germ proliferations.

In an ideal heating system the temperature difference from floor to ceiling is only two or three degrees when it is zero outside. It should be even less in warm weather.

And, for economy's sake, there should be no blanket of superheated air at the ceiling.

Drafts (cold air currents moving over the floor to the nearest radiator or return air register for reheating) should be eliminated. In fact, a good heating plant will not let cold air get to the floor in the first place.

Another thing to avoid: too long an interval between burner operations. Pleasant cycling of a home heating installation can be obtained only with proper adjustment and an up-to-date control system.

Modern thermostats are highly sensitive to changes in temperature. They will do their best, within limitations of the heating plant itself, to keep room temperatures even. However, a single thermostat rarely maintains a straight-line temperature through an entire house, we are advised.

Nor do most people wish to have the same temperature in all rooms. Usually a touch of coolth is preferred in the kitchen and in the bedrooms, and a bit more warmth in their so-called "living rooms" and bathrooms.

Another refinement in temperature control is the clock thermostat, which automatically provides for a lower temperature at night and a higher reading during the daytime.

By providing a lower temperature during beddybye, this clock thermostat not only contributes to better sleeping—because most people prefer to slumber in a cool room—but it also makes a substantial contribution to fuel economy.

A heating system which is low in first cost may, over a period of years, turn out to be most expensive in terms of operating and maintenance charges.

In contrast, a well-installed, properly designed, adequate heating system should give many years of trouble-free service.

Advice of the heating-cooling contractor on this point should be invaluable to an owner.

The contractor, on the basis of his experience, ought to suggest which system will be best adapted to the comfort requirements of a particular family.

Cooling, incidentally, is only one of the many advantages of an all-year air conditioning system. Bonuses include filtering of dust, dirt, and pollen to keep interior atmosphere clean and healthful.

So many advances have been made in cooling equipment in recent years that there is a system for every house and for every kind of heating.

In the case of hydronic heating, for instance, summer air conditioning can be provided while the house is being built.

One popular combination consists of convector-like units placed in individual rooms. They are equipped with fans, and usually are located under windows or near them.

Nowadays, with so many interesting choices available, there's no good reason why every home can't enjoy Perpetual Springtime . . . and better health.

That is, if heating contractors really get out among their prospects and SELL these plus advantages.

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AIR CONDITIONING HEATING & REFRIGERATION NEWS

Copyright 1960, Business News Publishing Co.

F. M. COCKRELL, *Founder*

'The Conscience of the Industry'

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READER SEEKS TECHCENTER REPRINTS

W. Otto Bros. Maintenance Co.
Forest Hills, N. Y.

Editor:

We have just bought four of your reprints including one entitled Corrosion and put them into our filing system for future reference.

At this time we are wondering whether you will eventually reprint your current series by Mr. Versagi, Applied Electrical Theory.

Your format does not readily lend itself to saving such articles as one may collect similar material from standard size trade journals.

Yet, the articles referred to merit preservation. One cannot see that Mr. Versagi should do all this hard work for just casual readership.

If you cannot see your way clear to reprint the series, I would like to suggest to the author to have this done on his own account. Certainly, we would buy a copy for three dollars and he should be able to sell thousands, if not to schools in general, then to trade schools and especially to the younger men in the field who, coming into contact with everyday problems, suddenly realize that what seemed mere theory on the black board now becomes awfully important and must be looked into forthwith.

WALTER OTTO

THOUGHT PROVOKING RECAP RECALLED

Whirlpool Corp.
Evansville, Ind.

Editor:

Your editorial recap of Garrett Hardin's thesis, "In Praise of Waste," is a real thought provoker. While you no doubt covered the meat of his subject, would like to know if the complete text is available.

R. P. GARVEY

* * *

Editor's Note: Prof. Hardin's complete text is scheduled for publication in book form during April of this year.

Handy Way to Subscribe

To See the Industry In Action EVERY WEEK

Keep up-to-date on what's going on in your industry. You'll see action weekly in AIR CONDITIONING, HEATING & REFRIGERATION NEWS. Covers latest news and gives you top how-to-do-it reports on residential, commercial, and industrial air conditioning, heating, and refrigeration for contractors, dealers, consulting engineers, distributors, servicemen, and manufacturers. Read the industry's only newspaper every week—you'll profit by it—only $6.00 per year, 52 issues (U.S. and Canada). Foreign: $10 per year.

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IMPORTANT: Company's Type of Business.....

DRI-VUE MOISTURE-LIQUID INDICATOR

HENRY VALVE CO.
CONTROLLING FLOW SINCE 1914

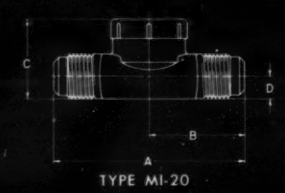
SAFE **CAUTION** **DANGER**

Protect System by Changing Drier

The moisture indicating element consists of a color changing ring with a center opening to provide a view for liquid indication. Both are clearly visible through the large optical glass viewing window.

The window is triple sealed to the forged brass body and covered by a threaded protector cap.

Dri-Vue has an extra large sensitized moisture element for easy viewing. It is completely reversible from "WET" to "DRY" depending on the condition of the refrigerant. It is shielded with a protective filter to minimize possible discoloration.



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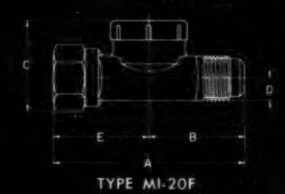

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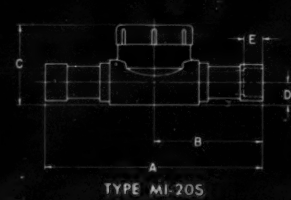

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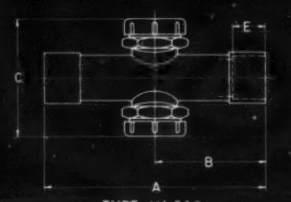


TYPE MI-21S

MALE FLARE—FORGED BRASS BODY—SINGLE PORT

Catalog Number	Type Conn.	Dimensions—Inches					Wt. Lbs.	List Price
		A	B	C	D	E		
MI-20-¼	¼" M. FL.	3	1½	1½	⅜	—	⅜	$ 5.90
MI-20-⅜	⅜" M. FL.	3⅛	1⅝	1½	⅜	—	⅝	6.00
MI-20-½	½" M. FL.	3½	1¾	1½	⅜	—	¾	6.50
MI-20-⅝	⅝" M. FL.	3⅞	2	1¾	½	—	⅞	7.50

MALE X FEMALE FLARE—FORGED BRASS BODY—SINGLE PORT

Catalog Number	Type Conn.	Dimensions—Inches					Wt. Lbs.	List Price
		A	B	C	D	E		
MI-20-¼F	¼" M. FL. x F. FL.	2¾	1½	1⅝	⅜	1¼	⅝	$ 6.10
MI-20-⅜F	⅜" M. FL. x F. FL.	3⅛	1⅝	1⅝	⅜	1½	⅝	6.25
MI-20-½F	½" M. FL. x F. FL.	3⅜	1¾	1⅞	½	1⅝	¾	7.50
MI-20-⅝F	⅝" M. FL. x F. FL.	3⅝	1⅞	1⅞	½	1¾	⅞	7.50

O. D. S. COPPER—EXTENDED—FORGED BRASS BODY—SINGLE PORT

Catalog Number	Type Conn.	Dimensions—Inches					Wt. Lbs.	List Price
		A	B	C	D	E		
MI-20-¼S	¼" O.D.S.	5¼	2⅛	1½	⅜	⅝	½	$ 6.40
MI-20-⅜S	⅜" O.D.S.	5¼	2⅛	1½	⅜	⅞	½	6.50
MI-20-½S	½" O.D.S.	6⅛	3⅛	1½	⅜	⅛	⅝	6.70
MI-20-⅝S	⅝" O.D.S.	6⅛	3⅛	1½	⅜	1⅛	⅝	7.00
MI-20-⅞S	⅞" O.D.S.	7	3½	1¾	½	¾	¾	10.00

O. D. S. COPPER TUBE—BRASS TRIM—DOUBLE PORT*

Catalog Number	Type Conn.	Dimensions—Inches					Wt. Lbs.	List Price
		A	B	C	D	E		
MI-21-⅞S	⅞" O.D.S.	7	3½	3½	—	¾	1⅛	$13.00
MI-21-1⅛S	1⅛" O.D.S.	7¼	3⅝	3½	—	⅞	1⅛	13.00
MI-21-1⅜S	1⅜" O.D.S.	8⅜	4⅜	3¾	—	1	1⅜	15.00
MI-21-1⅝S	1⅝" O.D.S.	9	4½	4	—	1⅛	1¾	15.50
MI-21-2⅛S	2⅛" O.D.S.	9	4½	4½	—	1⅜	2⅛	19.00

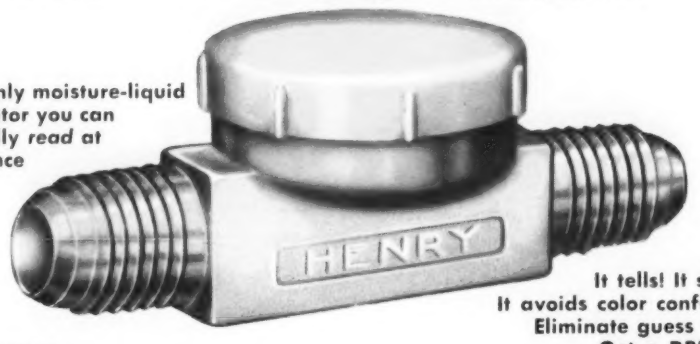
*Only one port has sensitized moisture element.

THE PERFECT COMPANION TO "DRI-COR" REFRIGERANT FILTER-DRIERS FOR COMPLETE SYSTEM PROTECTION

HENRY VALVE CO.
CONTROLLING FLOW
SINCE 1914

DRI-VUE* Moisture-Liquid Indicator

The only moisture-liquid indicator you can actually *read* at a glance



It tells! It spells!
It avoids color confusion!
Eliminate guess work.
Get a DRI-VUE.

PATENT PENDING

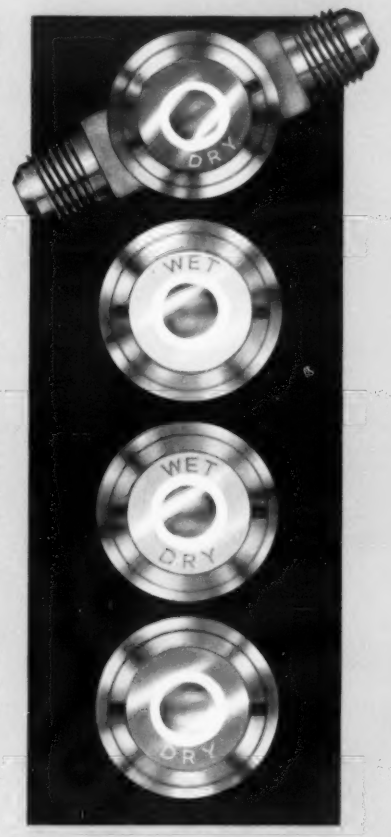
The only color indicator that tells you at a glance the condition of your refrigerant by spelling out the words "WET" and "DRY".

DRI-VUE Condition changes are read. Spells out "WET" or "DRY". Reliable-Accurate-Responsive. Discolor and wash protected. Full range of sizes ¼" to 2⅛".

DANGER "WET" When the refrigerant contains excess moisture, enough to damage the system, the indicator element is pink and the word "WET" is clearly visible in contrasting blue letters.

CAUTION "WET"-"DRY" As moisture is removed from the refrigerant, the indicator element changes to violet and as the word "WET" fades in contrast, the word "DRY" in pink letters begins to appear.

SAFE "DRY" When the moisture in the refrigerant has been reduced to a safe level the indicator element becomes blue and the word "DRY" stands out in contrasting pink letters.



ADDITIONAL FEATURES Clear polished glass—Triple sealed / Forged brass bodies or copper extensions / No plating or steel / No soft solder joints / Large wrench flats / Single and double viewing port / Threaded protective cap / For Refrigerants 12 and 22.

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HENRY VALVE COMPANY

For Refrigeration, Air Conditioning and Industrial Applications

MELROSE PARK, ILLINOIS, U.S.A. CABLE: HEVALCO, MELROSE, PARK, ILL.

From the Manufacturers

Service Bulletins

In this department, the NEWS presents significant items from information published in the Service and Technical bulletins of manufacturers.

Airtemp Service Slants

Those of our room air conditioners using a permanent split capacitor compressor have a start winding and a run winding, both energized whenever the compressor is operating.

A running capacitor is connected and remains permanently in the start winding circuit. With very few exceptions, adequate starting torque is provided without a starting capacitor. By thus eliminating the necessity for a starting capacitor and a starting relay, the unit's electrical system is simplified and service problems and replacement of parts (electrical systems) are kept to a minimum.

A very few units on which the PSC compressor is used required added capacitance to meet the factory specifications for minimum starting torque. These units are equipped at the factory with a starting capacitor and a starting relay. When these parts are used, the starting relay cuts out the starting capacitor after the compressor starts just as in other type compressors.

Units with a PSC compressor that do not include the starting capacitor and starting relay will start and operate satisfactorily (assuming all other components are operating satisfactorily) under normal conditions with voltages as low as 200 on 230-volt units and as low as 95 volts on 115-volt units. This refers to the voltage at the unit while it is starting.

Normal starting conditions assume that the compressor has been off for a sufficient time to permit pressure equalization within the refrigerant system.

Should a unit operate satisfactorily after start but compressor starting difficulty be encountered because of starting voltage below 200 or 95, consideration can be given to adding a starting capacitor and relay.

The compressor can be checked with a starting capacitor temporarily in the line. If the unit starts satisfactorily with a starting capacitor but does not start with the unit running capacitor, then the correct starting capacitor and relay should be installed on the unit. (Correct model numbers for capacitors and relays in Service Manual.) NOTE: When checking starting difficulties of a PSC compressor, determine whether the trouble is in the running capacitor.

A new running capacitor should be tried first before making any lengthy checks.

Sherer-Gillett Co.

Three changes are incorporated into low temperature display cases to increase defrost efficiency.

1. Installation of a coil cover which prevents heat from making direct contact with floor of display compartment.
2. Installation of gaskets at ends of display well. Eliminates pockets of heat which sometimes gather at ends.
3. Relocated defrost heater itself under the back edge of the coil with fins of the heater intermeshed with the coil fins. This makes for quicker defrosting.

These changes have resulted in holding the rise in temperature of display floor area to half that formerly experienced at the end of the defrost period, and the temperature remained under the freezing point. At the same time, temperature of air in the coil compartment showed a reduction up to 72%.

WSL Offers Bulletin On Winter Operation

NEW YORK CITY—Suggestions on the winter operation of outdoor cooling towers have been published by Water Service Laboratories, Inc., chemical engineer and corrosion prevention specialist.

Following the steps outlined in this leaflet will help avoid freeze-ups in cooling towers.

A copy of this leaflet (Technical Bulletin #598) can be obtained by writing to: Water Service Laboratories, Inc., 615 W. 131st St., New York 27, N. Y.

BUY or RENT!

FRANKELL

HERMETIC COMPRESSOR OPENER

AUTOMATICALLY OPENS ANY HERMETIC COMPRESSOR REGARDLESS OF THE POSITION OF THE WELD

- SAVES TIME—SAVES LABOR!
- CUTS COSTS—INCREASES PROFITS!

JUNIOR MODEL
Automatically opens any Hermetic Compressor up to 14" in diameter. **$397**

STANDARD MODEL
Automatically opens any Hermetic Compressor up to 20" in diameter. **$695**

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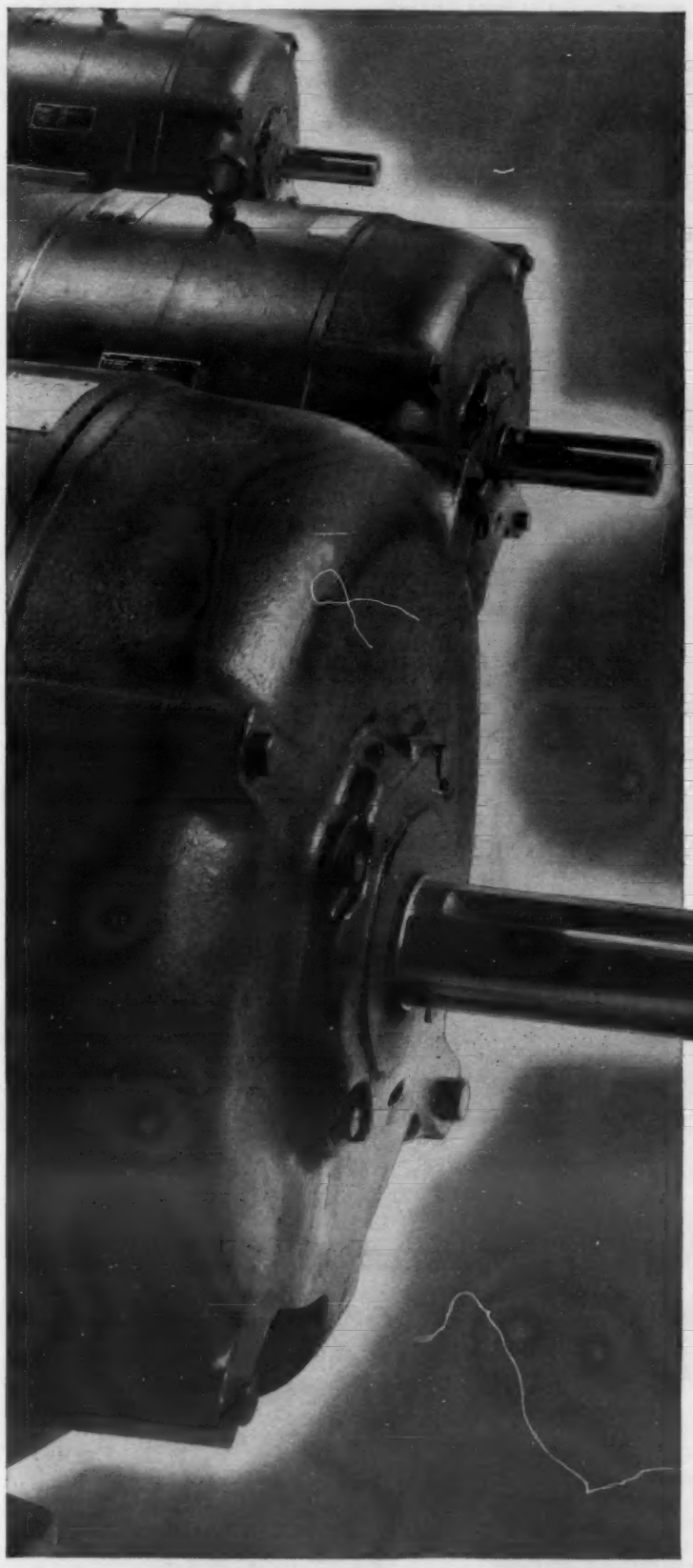
FRANKELL MFG. CO. INC.
862 Newark Ave., Jersey City 6, N. J.



1960
16,450,000 horsepower
1965
26,000,000 horsepower

In the next five years demand by industry for motors to drive air moving equipment is going to increase about 60% . . . from 16,450,000 horsepower in 1960 to 26,000,000 horsepower in 1965. Other needs are rising even faster. Careful matching of motor to equipment will assure minimum shutdowns for repairs and maintenance. Century Electric application engineers can help you get that right motor by selecting from among the over 10,000 types Century makes.

All types of equipment—Take hard-to-start pumps and compressors . . . with Century Electric motors designed for this kind of application, starting is no problem.

Same thing holds true for fans, pumps, machine tools, ball mills, printing presses . . . Century Electric has the right motor for each.

Reliable operation—Bonded "Mylar" and high-temperature varnish insulation give tough mechanical strength and resistance to moisture . . . rigid cast iron or steel frames mean long life and quiet operation . . . rotors get special balancing tests before shipment to eliminate vibration and assure longer life. . . .

Application aid—To be sure you have the right motor for each application, contact your nearest Century Electric application engineer. He knows motors inside and out because he sells, applies and thinks motors day after day. For details on Century's complete line of motors, write for the Century Motor Application Guide, bulletin 270A. For *more* than a motor . . .

CENTURY ELECTRIC COMPANY
St. Louis 3, Missouri *Offices and Stock Points in Principal Cities*

Century
59-15A

Cincinnati Residential Market Sets Record--

(Concluded from page 1)

same 13 contractors and one distributor who were checked the year before. Included among these contractors are the recognized leaders in the local residential air conditioning picture. In addition, a random sampling was made of firms known to be only moderately active in this phase of the business.

All the 1959 data is tabulated in the accompanying large table. There are also two small tabulations giving (1) a comparison of 1959 and 1958 sales, and (2) an analysis of the local residential cooling market for the years 1954 through 1959.

In 1959 the 14 firms listed had a combined total of 411 residential cooling jobs, 6,594 residential heating systems, 166 commercial air conditioning jobs, and 103 commercial heating systems. These firms' home cooling and heating figures may be considered representative of the area, but the same is not necessarily true of their commercial installations. Only firms known to be active to some extent in the residential field were approached in this survey. As a result, these commercial figures may not reflect the activities of firms who concentrate on commercial air conditioning and/or heating.

Purpose of the information on commercial activities is to give some indication of how much effort is concentrated on the residential field by the firms in question.

Eleven of the 14 firms listed said their residential air conditioning sales were up in 1959 over the previous year, one was the same, and two were down slightly. Gains of 50% to 100% were indicated.

While no such increases were shown in residential heating, 11 firms were up, one even, and two down from the 1958 sales figures.

Seven reported increases in commercial air conditioning, four remained the same, and three noted fewer jobs. On commercial heating the 1959 survey shows five firms ahead of the previous year, seven unchanged, and two down.

In no instance in any category were the reduced sales, as compared to 1958, significant in the over-all picture. They may or may not have been important to the individual contractor, though.

Of the 1959 residential cooling installations listed, 91 (22%) were purchased by builders for new homes, 72 (18%) were installed in new homes at the option of the buyer, and 248 (60%) went into existing homes.

Who Buys Residential In Cincinnati

	New Homes Bldr.	New Homes Buyer	Exist. Homes
1954	34%	25%	41%
1955	29%	28%	43%
1956	19%	32%	49%
1957	8%	40%	52%
1958	38%	8%	54%
1959	22%	18%	60%

1959 Sales Compared With 1958

	1959	1958
Residential Cooling		
New—Builder	91	87
New—Buyer	72	19
Existing	248	124
Residential Heating		
New	4,565	4,710
Existing	2,029	1,605
Commercial		
Cooling	166	146
Heating	103	98

An interesting comparison of the breakdown by purchaser (builder, buyer of new home, existing home) in Cincinnati for the past six years is given in an accompanying table. This shows the existing home has consistently increased its market potential. Starting with 41% in 1954, when the first NEWS survey was made, existing homes have increased slowly but steadily to the 60% bracket noted for 1959.

There has been considerable variation from year to year, however, between builder and home buyer purchases of air conditioning, this tabulation shows.

Starting with 34% in 1954, builder purchases steadily diminished to 8% in 1957 (the best year over-all prior to 1959), zoomed to 38% in 1958 (a poor year generally), and slipped back to 22% in 1959.

New Home Buyer Peak Reached In 1957

Peak year for purchase of air conditioning by the buyers of new homes was 1957, when this category represented 40% of the total. Lowest of the six years for which figures are available was 1958 when new home buyers accounted for only 8% of the total residential cooling jobs sold.

It may well be that general economic conditions, rather than weather, are more important as a factor governing sales of air conditioning in new homes. In the somewhat depressed year of 1958 buyers of new homes who might otherwise have been interested perhaps postponed the additional investment required for air conditioning.

Builders Bought 4 Times As Many Units In 1958

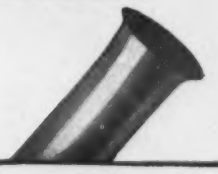
Builders, on the contrary, perhaps seeking to provide a stimulant to sagging sales in 1958, bought four times as many air conditioners that year as in the preceding 1957, the NEWS surveys would indicate. Builders continued their interest in 1959, buying a few more air conditioning installations than in 1958 but dropping from 38% to 22% of the over-all total sales.

As was indicated in the NEWS survey made the previous year, residential cooling sales represented a limited portion of total dollar volume in 1959 for all the Cincinnati contractors checked.

Top figure mentioned was 30%, which was noted by two firms. But 10 firms indicated that the majority of their dollar volume came from the residential field. This ranged from 60% to 97%, combining the totals for both residential cooling and heating.

Commercial air conditioning

NO SPLITTING WHEN YOU FLARE DRYSEAL



...REVERE DRYSEAL COPPER REFRIGERATION TUBE

When you flare DRYSEAL for compression fittings you'll save your temper and your time. It's because of the special temper and ductility. Bending dead-soft DRYSEAL is equally easy . . . do it by hand . . . no tools of any kind are needed. And when you get your DRYSEAL take a squint at those double-crimped ends. This is the final step in manufacturing, that immediately follows a special cleaning and dehydrating operation, which keeps dirt and moisture from entering the tube.

The seal is made in such a way that it does not change the diameter of the tube. This makes it possible to pass the tube through any opening large enough for the tube itself. Economical tube sizes range from ⅛" to ¾" O. D.

Also you'll find the job-size, 50-foot, one-coil pack easy to handle, light weight, economical and sturdily made to assure protection of the tube.

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COPPER AND BRASS INCORPORATED
Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Mills: Rome, N. Y.; Baltimore, Md.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Brooklyn, N. Y.; Newport, Ark.; Ft. Calhoun, Neb. Sales Offices in Principal Cities, Distributors Everywhere.

Looking for a Business to Buy . . . ?
Check the Business Opportunities Section in the classified advertising columns.

How Cincinnati Residential Contractors Fared In 1959

Contractor	1959 Total	Residential Cooling –New Homes– Bldr.	Buyer	Exist.	Residential Heating New	Exist.	Commercial Cool.	Htg.	Percentage of Dollar Volume—Residential Cool.	Htg.	Commercial Cool.	Htg.	Other
1	75*	37	....	38	850*	250*	10	20	15%	60%	5%	20%	.....
2	60*	30	....	30	675*	175*	....†	....	3%	23%	.....	.....	74%
3	52*	....	10	42	120*	120*	10*	15*	30%	45%	13%	12%	.....
4	45*	....	15	30	10†	150†	20	20	30%	40%	15%	15%	.....
5	25*	....	10	15	5*	55*	....	15	25%	60%	.....	15%	.....
6	20*	10	10	....	500*	150*	2*	7*	5%	75%	1%	19%	.....
7	20*	14	....	6	550*	75*	4*	....	7%	90%	3%	.....	.....
8	18*	....	2	16	10*	45*	32*	3*	16%	22%	30%	2%	30%
9	10*	....	....	10	30*	230*	....	6*	5%	90%	.....	5%	.....
10	8*	....	....	8	....	65*	1*	....	5%	55%	1%	.....	39%
11	7	....	3	4	3	3	20*	12*	15%	5%	45%	20%	15%
12	4†	....	2	2	2†	1†	36†	2†	2%	1%	43%	1%	53%
13	2†	....	....	2	110*	70*	1†	3†	2%	70%	1%	2%	25%
A‡	65*	....	20	45	1,700*	640*	30*	....	5%	90%	5%	.....	.....
Total	411	91	72	248	4,565	2,029	166	103	.....	.....	.....	.....	.....

*Up from 1958. †Down from 1958. ‡Distributor representing 25 dealers.

installations were noted by 11 of the firms, accounting for from 1% to 45% of dollar volume, and 10 firms did some commercial heating work for from 1% to 20% of total dollar volume.

Six firms also engaged in "other" activities, including such fields as commercial refrigeration, service work, etc. Range here was 15% to 74%.

While the percentage breakdown of dollar volume is significant, a similar comparison on profits would probably be even more interesting, but no reliable information about this can be obtained in most instances, unfortunately.

Answers to survey questions regarding distribution, stocking, advertising, and promotion disclose no detectable changes from the pattern of previous years.

Majority of the equipment sold by Cincinnati contractors in 1959 was obtained directly from the manufacturer with the balance being obtained from wholesale distributors.

Some stock is maintained by most contractors, but little is purchased in advance of sale.

No one made any splurge in advertising and promotion. Telephone book advertising seems to continue as the major expenditure for most contractors, although a limited amount of newspaper advertising and direct mail is used by some.

Referrals by satisfied users still seem to be the most effective leads to residential air conditioning sales, according to Cincinnati contractors.

Permatron Opens Los Angeles Branch

CHICAGO — "The lifetime electrostatic air filter business is growing so rapidly," Permatron Corp. here has announced, that it has opened a branch office in Los Angeles in association with Van D. Clothier, Inc.

Standard sizes in both domestic and industrial models will be carried in stock at 1025 E. 16th St. Arrangements have been made to give speedy service on special sizes, it was stated.

Don Clothier, regional sales manager, has completed special training in the Chicago factory and will offer technical advice on filter design and service. Established policies of cooperation with wholesalers will be continued, the announcement said.

In Vancouver Area

Oil, Gas Firms Secure Loans on Heating Sales by Second Mortgage

VANCOUVER, B. C. — Imperial Oil, Ltd., has entered the second mortgage finance business here in order to increase fuel oil sales and meet competition from natural gas.

New homeowners can borrow up to $1,200 to finance installation of oil heating equipment over a seven-year period with minimum 6% interest.

The new program is "working very well and living up to all our expectations," according to Howard Coxon, British Columbia regional manager for Imperial. Other large fuel oil companies in the area were said to be considering similar moves.

British Columbia Electric Co. reciprocated by announcing a similar program that would lend up to $1,400 to new homeowners in already developed natural gas service areas. Both companies are securing loans by a second mortgage on the home.

"The competition between oil and gas as a fuel is becoming severe," commented a spokesman for B.C. Electric.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Sell Climate by Chrysler

Dealers who sell Chrysler Air Conditioning . . .

attract more prospects!

Consider this elementary fact about selling: Before you can make sales, you first must have prospects. Now consider this important fact about Chrysler: We believe—strongly—in the power of advertising to create and attract prospects. And, we practice what we preach.

When you sell equipment backed by as much sound advertising, promotion, and merchandising as Chrysler Air Conditioning, you attract more people who are ready and eager to buy. And Chrysler's 1960 program does the complete job for you because it blankets every buying influence.

Want more reasons why your future is safer with Chrysler? Send for your copy of the booklet, "It will pay you to take a long look ahead . . . with Chrysler Airtemp." Or for super-fast service, call your Chrysler Distributor.

CHRYSLER AIRTEMP

Airtemp Division, Chrysler Corporation, Dept. H-20, Dayton 1, Ohio

See Chrysler Air Conditioning at the
2nd Southwest Heating & Air Conditioning Exhibit
Dallas, Texas, Feb. 1 to 4
Booth Numbers 620, 622, and 723

'Forced Humidifiers' (3)

How To Determine How Much Moisture Should Be Added to Home

This is the third of a series of articles dealing with "forced humidifiers"—a relatively new product offering interesting sales possibilities for the residential heating and air conditioning contractor. Broad aspects of the subject are being discussed in the series, including the market, sales approaches, application, and service plus specific information about 14 different makes.

The material was gathered in personal, phone, and mail interviews with many individuals, including manufacturers, dealers, and others.

Supposing that a contractor has sold a prospect on the idea of improving winter humidity conditions in his home by the installation of a forced humidifier, how can he go about "sizing" the job? In other words, how much moisture should be added to the home?

While no exact formula exists for figuring this, some manufacturers provide suggested guides that will be helpful. Actually, it pretty much means that a contractor has to depend on a "cut-and-dry" approach to the problem. This is not so difficult or necessarily so inaccurate, however, because most forced humidifiers have simple methods of controlling the amount of humidification produced by the devices.

Many Variables Involved

The problem of sizing a humidifier installation stems from the fact that many variables are involved, perhaps even more than in a conventional heating system. Family living habits, house construction, and outdoor temperatures all have an important bearing on indoor humidity conditions.

While these factors also are present in heating, fewer problems are involved. With a properly installed heating system, a fairly constant indoor temperature can be maintained regardless of outdoor conditions. As the outdoor temperature drops, the furnace operates more to maintain a predetermined temperature. This merely costs money for additional fuel and power.

With a forced humidifier, however, a drop in outdoor temperature can lead to such problems as condensation on windows. Conversely, to maintain a constant humidity condition indoors more moisture must be added at the outdoor temperature falls.

Varying Living Habits

Variations in family living habits could conceivably have more impact on humidity than heat, also. Frequency of showers, floor mopping, clothes washing and drying etc., would have a bearing on the amount of humidity added to the air and thus on the operation of a humidifier.

Construction of the house is most important. Less moisture need be added to the indoor air of a tightly constructed modern house having a good moisture barrier on the inside of exterior walls to maintain a predetermined relative humidity. More moisture would be required for a loosely constructed house, especially one with one vapor barrier on the inside of exterior walls.

Lack of Vapor Barrier Can Lead to Trouble

Too much moisture in a house lacking a vapor barrier can lead to trouble, however. Moisture vapor would readily pass through the walls and upon reaching the exterior sheathing could condense or freeze, depending upon the outdoor temperature, of course. If insulation is in the stud space without the protection of the vapor barrier, such condensation or freezing could occur within the insulation itself.

Lack of a suitable vapor barrier does not necessarily mean, however, that humidity conditions cannot safely be increased in the house. Certain types of interior paints have considerable resistance to water vapor transmission, according to the Forest Products Laboratory of the U. S. Department of Agriculture, located in Madison (5), Wis.

One type of house construction should be avoided as the plague with respect to increasing indoor humidity with a forced humidifier. If the sheathing or the building paper beneath the sheathing on the outside of an exterior wall acts as a good vapor barrier, moisture will be trapped in the walls, which will obviously lead to trouble.

30% to 50% Relative Humidity Suggested

While most humidifier manufacturers suggest that indoor relative humidity should be maintained at 30% to 50% to meet the needs of health, comfort, etc., they recognize the limitations imposed by condensation on windows and within walls.

Quoted in a recent booklet published by Armstrong Machine Works are the following comments and a table from Report No. 1740 of the Forest Products Laboratory:

Maximum Relative Humidity

"Tests have shown that, with suitable integral vapor barriers or suitable paint coatings, adequate protection is obtained in houses with or without insulation maintained at relative humidities as high as 40% in the coldest weather.

"Houses adequately protected with vapor barriers can be safely maintained at 40% relative humidity when outdoor temperatures are 0° to -20° F., but in houses without vapor barriers, the humidity should be 25% or less under the same outdoor temperature conditions."

The accompanying Table 2, prepared from the same report,

(Continued on Page 33)

THIS UNIT PRODUCES...
• EXTRA YEAR 'ROUND PROFITS
• CUSTOMER SATISFACTION
• POSITIVE HUMIDIFICATION YOU CAN SEE . . . FEEL . . . AND DEMONSTRATE.
WALTON'S PATENTED CENTRIFUGAL ATOMIZER

HERE'S WHAT'S SPECIAL ABOUT Walton HUMIDIFIERS . . .

WALTON'S METHOD

Unlike unprofitable, toy-like "evaporators" and "vaporizers," Walton humidifiers are scientifically-engineered, precision-assembled units designed for positive, truly effective humidification. Employing the patented "centrifugal atomizer," Walton humidifiers produce great quantities of visible vapor without problems of clogging jets, limed evaporator plates or smelly wet packs. They are easy to demonstrate, dependable to operate and will always gain complete customer satisfaction.

WALTON'S QUALITY

Walton humidifiers reflect the result of twenty-five years of pioneering and research in the field of humidification. Walton's sole product and interest is humidification, and the Walton name is your assurance of quality and performance. Constructed solely of non-corrosive metals, the units also offer electronic balancing of the single moving part for trouble-free, whisper-silent operation.

A SINGLE SOURCE FOR EVERY HUMIDIFICATION NEED . . .

RESIDENTIAL MODELS . . . FOR HOT AIR OR WET HEAT SYSTEMS

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Mechanical Supply Co., St. Louis, Mo.
Standard Air and Lite Corp., Pittsburgh, Penna.
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G. W. Berkheimer Co., Inc. Gary, South Bend and Indianapolis, Ind.
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AIR CONDITIONING HEATING & REFRIGERATION ***NEWS***

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For the first time — you can offer a convenient master control for year-round air conditioning — that your customer can put in any room of his choice, right at his fingertips!

This Diamond Jubilee product was especially designed to help you sell more year-round air conditioning systems. Honeywell's new Weather Station is a complete, precision instrument that's as reliable as it is attractive. It controls indoor comfort and checks outside weather conditions from a single, central location. The convenience of a clock, with its night setback feature, a barometer and humidity indicator also are provided. The panel also includes a warning light for clogged filter and other minor disorders, thus eliminating nuisance service calls.

This amazing new air conditioning control is typical of many benefits you gain by working with Honeywell. When you handle Honeywell products, you have simplified inventories, easier installation and prompt, nationwide service when you need it.

For more information about Honeywell's new Weather Station or Honeywell's complete line of control systems for heating and cooling, phone your nearest Honeywell office, or write:

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Dept. AA013, Minneapolis 8, Minn.

Sell these Weather Station benefits to your customers!

It eliminates nuisance service calls

He can be his own weather man

No more trips to the basement

Honeywell's new Weather Station is being pre-sold for you to your prime prospects beginning in the April issue of *Better Homes and Gardens* and continuing throughout 1960.

air conditioning itself

NEW WEATHER STATION!

Honeywell

First in Control

SINCE 1885

'Forced Humidifiers'

(Continued from Page 28)

gives the maximum relative humidity recommended for houses of three types of construction: no vapor barrier, paint vapor barrier, and film type vapor barrier.

What does all this mean in terms of how much moisture should be forced into a house to maintain desired humidity conditions within the limits outlined above?

Mueller Climatrol, among others, spells this out in tabular form as shown by the examples in Table 3. Recommended relative humidity for various outdoor temperatures is given, along with what this means in quarts of water per day required for various size and construction of houses, all based in terms of 70° F. indoor temperature and outside r.h. of 50%.

The data covers houses of these volumes: 8,000, 10,000, 12,000, 14,000, 16,000, 20,000, and 24,000 cu. ft. and houses of "loose," "average," and "tight" construction.

Loose, Average, Tight Construction Defined

The three latter terms are defined as follows:

"Loose" construction (2½ air changes per hour): No insulation, no weather stripping, no storm doors or windows, no vapor barriers.

"Average" construction (1 air change per hour): Insulation in walls and ceiling, loose fitting storm doors and windows, vapor barriers.

"Tight" construction (½ air change per hour): Walls and ceilings insulated, tight fitting storm doors and windows, weather stripping on doors and windows.

Most forced humidifiers on the market today are rated for a maximum capacity under specified conditions by the manufacturers. Probably a humidifier should be selected for the maximum capacity required. Then its output can be throttled down to meet the requirements of the application.

3 Basic Types of Forced Humidifiers Available

As has been noted, three basic types of forced humidifiers are on the market today: (1) atomizing, using a pressure nozzle or centrifugal spray wheel, (2) evaporating, using a wetted metal pad or revolving drum, (3) vaporizing, using an electric immersion heating element, hot water coil, etc.

Relative merits of the three basic types, as well as individual makes, are subject to various claims and counter-claims, as is to be expected in a competitive field.

The arguments concern such matters as effectiveness, first cost, operating cost, life of equipment, service required, and possible harmful effects. In the absense of comparative test data from a qualified yet disinterested source, the NEWS cannot honestly take any stand on such an issue.

Opinions Differ on Need for Humidistat

There is also a considerable difference of opinion among humidifier manufacturers regarding the need for a humidistat to control the unit's operation. Some models, however, are so designed that a humidistat is essential; other designs make it optional.

Usual practice is to cycle the humidifier with the furnace blower. Thus, when the blower cuts in, the humidifier goes into operation by starting the spray wheel motor, opening a solenoid valve in the water line, cutting in the immersion heating element, fan, etc., depending on the design.

Even with this type of control arrangement, however, a humidistat is often hooked up in series with the blower control so that if humidity requirements have been satisfied, the humidifier will not go into op-

(Concluded on Page 34)

Table 2—How Permissible Humidity Varies With Temperature, Construction

Outdoor Temperature (°F.)	Theoretical Indoor R.H.*	House with No Vapor Barrier	Paint Vapor Barrier (Insulated)	Vapor Barrier of Foil, Polyethylene, Asphalted Paper
–20	1.5	18	24	30
–10	2.6	19	27	35
0	4.4	21	30	40
10	7.2	27	34	42
20	11.5	34	39	44
30	18.9	43	45	47
40	26.6	50	50	50

*Based on outdoor relative humidity of 75% and no moisture added to air indoors.

*Table 3—Examples of Moisture Requirements**

Volume of Home (Cu. Ft.)	Outside Temp. (°F.)	Recommended R.H. Setting (%)	Loose House (Qts/Day)	Medium House (Qts/Day)	Tight House (Qts/Day)
8,000	–10	20	24.7	9.84	5.04
	0	25	29.1	11.5	5.76
	10	30	34.3	13.68	6.96
	20	35	37.5	14.86	7.44
	30	35	32.2	12.85	6.49
10,000	–10	20	30.7	12.5	6.24
	0	25	36.2	14.4	7.2
	10	30	42.7	17.25	8.65
	20	35	46.8	18.71	9.36
	30	35	40.15	16.32	8.15
12,000	–10	20	37.9	14.86	7.44
	0	25	43.2	17.25	8.65
	10	30	51.6	20.62	10.31
	20	35	53.75	21.6	10.8
	30	35	52.75	19.45	9.84
14,000	–10	20	43.2	16.1	8.4
	0	25	51.5	19.2	10
	10	30	60	24	12
	20	35	65.5	26.4	13.2
	30	35	56.5	21	11.5

*Based on 70° F. indoor temperature and outside relative humidity of 50%.

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ABOARD THE PROFIT ROCKET!

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TYPHOON WORKS WITH YOU!
Its field reps are at your call for technical help, sales training and sales closing!

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Its National Accounts Department is in constant contact with hundreds of nation-wide purchasers!

4 FINANCE PLANS!
Stretch your working capital; help you sell firms short of capital. A lease plan, too!

- Broad product line — a unit for every need!
- Customized units at mass production prices!
- Dealers' right-to-profit is a basic Typhoon policy! You make more per sale with "Operation Moonshoot."
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☐ Please send product literature and reference chart.
☐ Have your representative call for an appointment.

Name.....
Firm.....
Address.....
City.....Zone....State.....

Sizing 'Forced Humidifiers'--

(Concluded from Page 33)

eration as the blower does.

A forced humidifier should not be simply controlled by the blower if the system is set up to operate on "Constant Air Circulation," or if the blower is controlled manually so as to operate all the time. As the furnace plenum cools off between cycling of the fire, considerable condensation can occur on both the outside and inside of the plenum with the humidifier in operation.

Use of a humidistat to control the humidifier is therefore recommended by manufacturers for a system with CAC or constant blower operation under manual control. It's also possible, however, to avoid condensation problems under these operating conditions by cycling the humidifier with the oil or gas burner. The wiring connection is no more complicated than when using the blower control.

Devices for Determining Relative Humidity

In connection with the matter of controls and the earlier discussion on how much humidity is needed, the problem of determining exactly what the r.h. is in a house is not to be dismissed lightly.

A grossly inaccurate reading made by a homeowner can result in an expensive nuisance service call, for example.

Several humidity indicating devices are in use, including the sling psychrometer, stationary wet and dry-bulb thermometers, dials actuated by a thread of sensitive material, dials actuated by a ceramic-coated coil of metal which reacts to moisture changes just as bi-metal reacts to dry-bulb temperature changes, and paper strips with graduated spots of cobaltous chloride which turn color with changes in moisture.

While the sling psychrometer is generally conceded to be the most accurate indicator, it's no easy trick to get identical results in successive readings.

Humidistats Usually Offer Close Accuracy

Accuracy of the other devices mentioned can vary greatly with the individual indicator, though many give fairly good results within a limited range, say some humidifier manufacturers.

Humidistats, however, are carefully calibrated, so close accuracy can usually be expected in their operation.

Incidentally, the installer of a humidistat should take care to make the right connections in his wiring. Most humidistats are designed to be used for either dehumidification or humidification control. Electrical connections are therefore provided so that when the relative humidity in the space reaches the humidistat setting, the control will either "make" or "break" the electrical circuit.

It is essential, therefore, that for controlling a residential humidifier, the humidistat should be hooked up so that electrical circuit is broken when the desired degree of relative humidity is reached.

At least one manufacturer, Research Products, plugs the other connections on its humidistats before shipping them into the field to avoid this problem.

Regardless of the method of control used, a householder probably cannot just set the humidifier control and forget about it, no more than he can set the thermostat of the heating system and forget about that.

A sharp drop in outdoor temperature usually requires a slight increase in the thermostat setting. It may very well also require reducing the setting of the humidistat to avoid condensation on windows. Necessity of doing this could be avoided, of course, with a low setting of the humidifier control in the first place, but then the full benefits of the humidifier would be lost in less severe conditions.

How Much Attention Will Humidistat Need?

How much attention the humidifier itself will require is perhaps another debateable point. Aside from mechanical problems that may occur with any piece of equipment, there is the question of scaling that usually takes place when water, especially hard water, is evaporated regardless of the method of evaporation used.

Most manufacturers are inclined to minimize the problem of scaling, but all recommend at least an annual inspection. More frequent attention is advised for the electric immersion element units to remove the scale that breaks off the heating element and accumulates in the water pan.

(To Be Continued)

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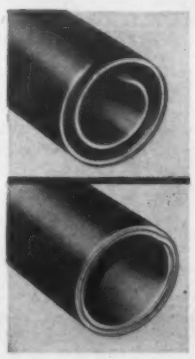
428 N. Willow Road • Evansville, Indiana

There's almost no limit to the things Bundy can mass-fabricate



Bundyweld is the only tubing double-walled from a single copper-plated *steel* strip, metallurgically bonded through 360° of wall contact for amazing strength, versatility.

Bundyweld is lightweight, uniformly smooth, easily fabricated. It's remarkably resistant to vibration fatigue; has unusually high bursting strength. Sizes up to ½" O.D.

Maybe your tubing problems don't run to animal shapes, but it's likely that you can benefit from Bundy's experience in mass-fabricating complex tubing parts. Here's why:

Precision bending: Bundy-developed machines turn out parts to exacting customer specifications . . . *with mass-fabricating savings.*

Great strength: Your component will be fabricated from Bundywelds, the copper-brazed steel tubing that's *double-walled* from a single steel strip. Bundyweld's long history of leakproof performance has made it the safety standard of the refrigeration industry.

Expert design service: You can call on our engineering staff at any time to help with the design of your product. We may be able to point out short cuts that save you money without compromising engineering standards. Covered by Government Spec. MIL-T-3520, Type III.

Next time you have a tubing problem, better call Bundy *first.* Phone, write, or call Bundy Tubing Company, Detroit 14, Michigan.

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1, Col. 1)

So what? They're ahead of us in rocketry, aren't they? Can't have that. Let's chase them to the Moon by strait-jacketing ALL our children into the scientific mold!

American secondary schools, it was pointed out by suddenly arisen *post Sputnik* critics, had overemphasized "personal adjustment," trade-training skills (like heating and air conditioning mechanics) and such fol-derols as folk dancing, operating a typewriter, music, and ceramics.

Because ALL high school students weren't being trained to become masters of calculus, research scientists, and missile engineers, it was felt that we might lose . . . er, well . . . maybe the Race to Space.

Science and "math" teachers —plus scads of frustrated engineers—made the most of this opening wedge.

You can't blame them. They had been downgraded (and unfairly paid) too long.

Out-of-season politicians, and anyone else who had an axe to grind, got into the act, too. It was a heyday for the discontented.

Sane Balance

Worriers about our public schools were entirely right, of course, in their charge that undisciplined courses in "togetherness" were crowding out solid academic studies.

But they went overboard *themselves* when they tried to shove aside such solid-value cultural pursuits as history, literature, philosophy, and the various aspects of psychology and sociology. (Also, the communication skills which make a democracy work.)

"We have to beat Communist Russia" was the theme. "And we'll do it by piling science requirements onto all children until they're dizzy."

Overlooked was the fact that many a young person might be a second-rate scientist and a third-rate mathematician; yet have high aptitudes in the arts and "humanities," which also are needed pursuits.

Net every Johnny was cut out to be a football halfback, nor every Sally a laboratory technician—or beauty queen with 39-21-37 measurements, for that matter.

Fortunately, most American universities remained calm and sane during this sudden assault on the ramparts of higher education.

As President Harlan Hatcher of the University of Michigan puts it: "We do not propose to engulf the Humanities. Great literature, history, social studies, and the arts truly comprise a liberal education."

University Presidents David Henry (Illinois), Hovde (Purdue), Hannah (Michigan State), Morrill (Minnesota), Hilberry (Wayne State), Milton Eisenhower (Johns Hopkins), and many others have issued similar statements of intent and purpose.

Thus it is that in most colleges and universities, especially west of the Alleghenies, a promising student will be admitted with a modest modicum of science and mathematics courses on his high school record, despite the flurry.

To be sure, most high schools and colleges are encouraging youngsters who have aptitudes for mathematics and science, because we do need 'em. Point is: they recognize that we also need *human skills.*

Progress? or Peace?

Not so long ago a scientist by the name of von Braun (younger brother of the German emigrant who has helped spark our Missile Program) delivered a speech to a club of congenitally skeptical Detroit newspapermen.

His theme: America's educational system is inadequate.

"In Germany, and in Russia," he perorated, "it's four years of mathematics, six years of science, and 12 years of discipline."

"Uh-huh," interrupted a heckler, "and who *started* World Wars One and Two? World War Three, if it occurs, can be instigated only by Russia or Communist China, which also stress science over the Humanities."

(The normally eloquent von Braun had no answer to this thrust, and immediately thereafter lost his sponsor—Chrysler Corp.—on the Lettuce League Circuit.)

Einstein and Weiner

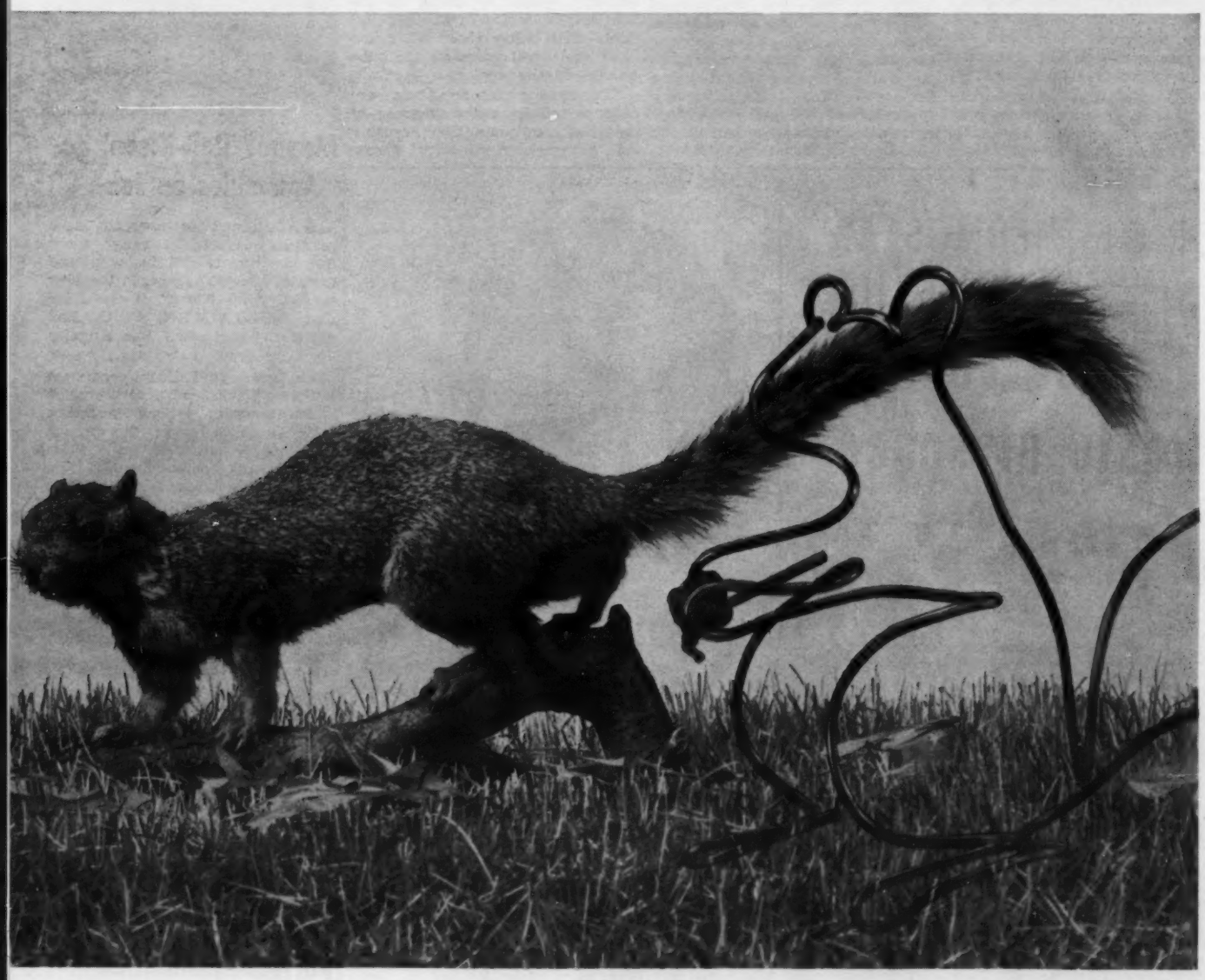
Probably the most influential men of modern times weren't Churchill or Eisenhower or de Gaulle or Khrushchev—or any other political figure you'd name.

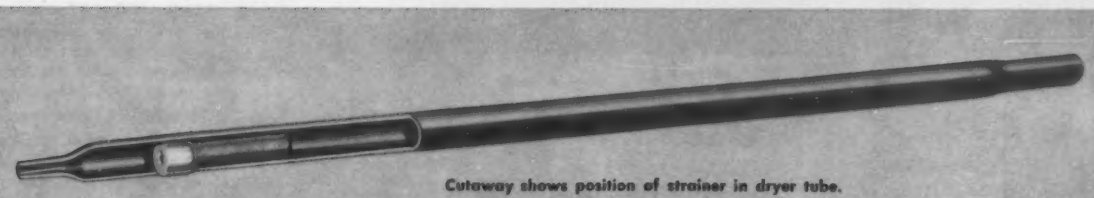
Historians probably would nominate Albert Eistein (atomic bomb) and Prof. Norbert Weiner of M.I.T. (automation). Prof. Weiner "invented" Cybernetics —the mathematical equations which underlie automation. Read him now (he's worried):

"Electronic brains are getting out of control and may destroy mankind. We have reached a point in the development of computing machines where they are dangerous. Their action is too rapid for human control.

"In programming our machines for pushbutton warfare, we have started an automobile which is racing straight for a brick wall and will smash into

(Concluded on Page 41)





Cutaway shows position of strainer in dryer tube.

"11 inches of life insurance" . . . that's how Hotpoint describes this refrigeration dryer tube. Filled with synthetic zeolite, it absorbs the slightest trace of moisture to protect the refrigeration system from failure. The tube is made from ⅜" O.D. x .028 Bundyweld. One end is reduced slightly for silver soldering, while the other is reduced to .080 I.D. in less than ⅝".

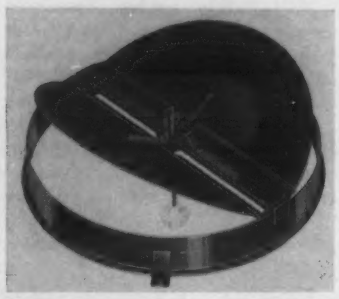
There's no substitute for the original

BUNDYWELD® TUBING

WORLD'S LARGEST PRODUCER OF SMALL-DIAMETER TUBING • AFFILIATED PLANTS IN AUSTRALIA, BRAZIL, ENGLAND, FRANCE, GERMANY, AND ITALY

BUNDY TUBING COMPANY • DETROIT 14, MICH. • WINCHESTER, KY. • HOMETOWN, PA.

Diffuser Damper Set with Screwdriver



● A new type of ceiling diffuser damper featuring an "Adjusto-Stop" was announced by Air Control Products, Inc., Dept. AH&RN, Coopersville, Mich. Features were listed as including:

"Adjusto-Stop balanced at diffuser face. Simply set with screwdriver after installation to stop damper at predetermined opening. No interference with closing action. New 'screw-type' operator rack and pinion gear opens and closes damper with ease."

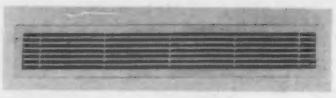
The damper is claimed to be rattle-free "even under extreme air velocities." No installation ring is required.

'Poly-Mag 80' Fabric Picks Up More Dust

● A new and improved electrostatic polyester plastic fabric has been engineered and is now being produced exclusively for Stoddard Industries, Dept. AH&RN, 3383 E. Layton Ave., Cudahy, Wis.

Independent laboratory tests are said to have shown that with this new material, called "Poly-Mag 80," Stoddard's "DUST-magnet" furnace and air conditioner filters assure improved dust pick-up. They are unaffected by humidity or by temperatures up to 230° F.

The new plastic has a higher resistance to shrinkage than previously used plastics, and has a lower pressure drop, it was stated.



Aluminum Grille Added by Carnes

● The "Curtainaire," an extruded aluminum grille for supply or return installations, is being added to its line of air distribution products by Carnes Corp., Dept. AH&RN, Verona, Wis.

This aluminum grille is available in widths from 1½ in. to 15 in. and in lengths up to 12 ft. in one piece. The bars are obtainable in 0° or 15° settings and are spaced so as to be pencilproof, it was stated.

Two frame widths are standard, with friction springs for floor or sill installation, or safety catches for wall or ceiling installations. Accessories for this grille are opposed blade damper, straightening vanes and blanking baffles, the company announced.

Evaporative Cooler Eliminates Scaling

● A new "Dri-Fan" evaporative water cooler which is said to make it possible to control condensing pressure to a very narrow range is offered by Recold Corp., Dept. AH&RN, 7250 East Slauson Ave., Los Angeles 22.

It can be used with single or multiple compressor systems with all of the advantages of water-cooled condensers but eliminating scaling problems, according to Recold.

"Purified water is circulated through a closed system completely eliminating scale or other deposits in the condensers," it was stated. "Water returning to the evaporative cooler is at temperatures well below those at which hard scale will form on the tube bundle of the cooler.

"Condensing temperatures are held to within a few degrees of designed conditions, thus assuring full compressor capacity during summer weather without overloading the motor and, also, assuring proper head pressures during winter conditions. The constant condensing conditions have resulted in great savings in system maintenance cost."

Manual 'Roll-Kleen' Assembles on Job

● Designed to operate in a pressure differential range from 0.3 in. w.g. to 0.6 in. w.g. and from 350 to 500 f.p.m. is the new manual "Roll-Kleen" of the Farr Co., Dept. AH&RN, P. O. Box 45187, Airport Sta., Los Angeles 45.

The new Roll-Kleen comes in kit form for assembly at the point of installation. It carries media rolls 70 ft. long in the proper widths for 3, 4, 5-ft. wide filter sections, the company said. Unit heights range from 5 ft. to 15 ft. in increments of 4 in.

"Each manual Roll-Kleen filter section is shipped knocked down and is simple to assemble at the job site," it was stated. "Two or more sections can easily be bolted together and all structural members are of sturdy, heavy-gauge steel."

Portable Humidifier Atomizes Pint Per Hr.

● Model 50 "Mistalator," a portable electric atomizing humidifier that operates on an aerosol principle, has been added to its line by Skuttle Mfg. Co., Dept. AH&RN, Milford, Mich.

Water is atomized, at the rate of 1 pt. per hour, into particles of about 5 to 10 microns by centrifugal force; rapidly, evenly, and entirely without wetting the surrounding area, according to Skuttle.

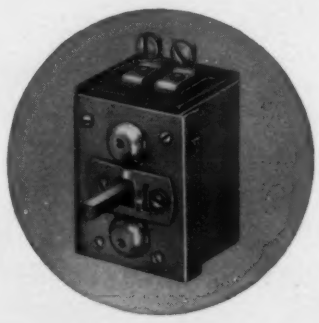
This produces a suspension of minute liquid particles in the air as fog or mist. It will adequately humidify areas up to 8,000 cu. ft., the company said.

The polished aluminum and stainless steel container is corrosion resistant and holds 5 qts. of water. The Mistalator retails for $69.95.

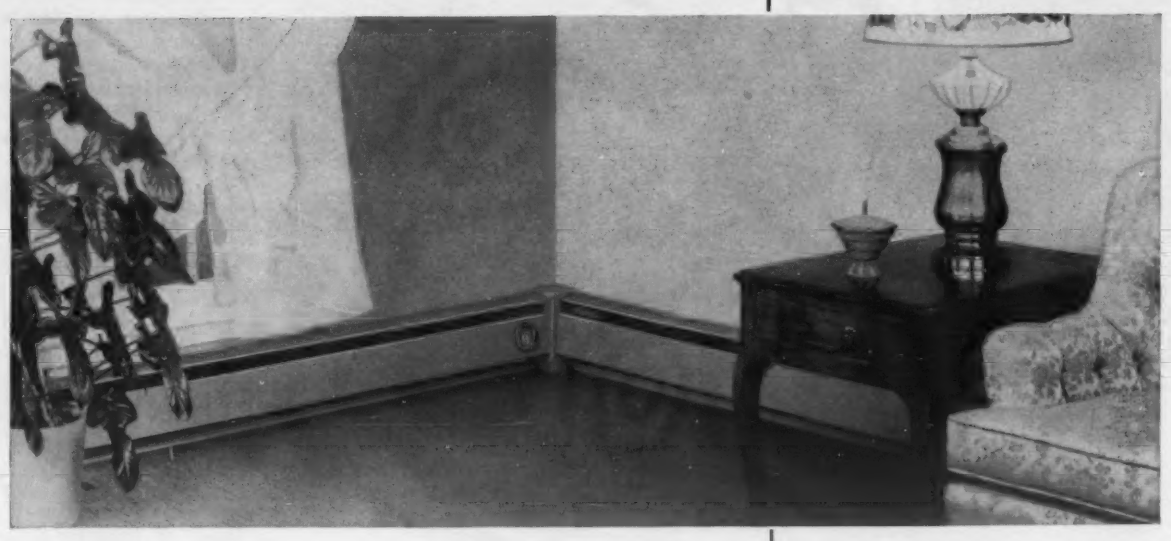
More details on the products described on these pages may be obtained by writing the manufacturer at the address given in each story.

"WILCOLATOR G1 THERMOSTAT GIVES US close control without waste of space"

. . . says Morris Markel, Chief Engineer, Markel Electric Products, Inc.



Wilcolator Type G1, a single-pole, remote bulb liquid expansion thermostat, is used in Markel baseboards.



"Compact Wilcolator G1 thermostats fit snugly into baseboard heating modules. They measure only 2¾ x 1⅝ x 1⅞ inches. And they give close temperature control that conventional thermostats simply don't offer." So reports Mr. Markel, a man who knows thermostats. Other advantages include snap-action, vibration-proof contact mechanism, positive Off position, and no TV or radio interference.

Wilcolator Type G1 is the ideal thermostat for many heating applications. Write for complete details.

Temperature range: to 585F or more

Dials: standard or special dials, pointers and chrome bezels available

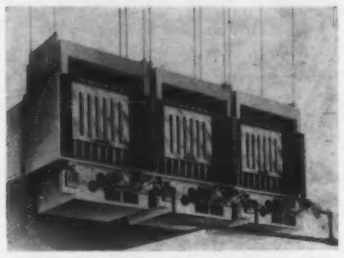
THE Wilcolator COMPANY

Thermostats for Every Heating and Cooling Application

THE WILCOLATOR COMPANY
1001 NEWARK AVE., ELIZABETH, N.J.

Subsidiaries and/or Affiliates in Canada, Great Britain, Italy, Western Germany and Australia

Duct Furnace Adapts to Air Conditioning



● A new line of gas-fired duct furnaces with special features for air conditioning applications has been announced by Modine Mfg. Co., Dept. AH&RN, Racine, Wis.

The re-designed line incorporates removable air by-pass baffles which eliminate the need for adding by-pass ducts to handle the greater c.f.m. required by most systems which provide cooling; stainless steel burners; lint-free burners to reduce servicing due to pilot outages; low voltage controls; aluminized steel casings; built-in draft diverters; stainless steel drain pans (optional); 100% automatic gas shut-off; and self-cleaning burner ports, it was reported.

"An unlimited number of duct furnaces in the new line can be mounted side-by-side in any one of three height groupings to meet any B.t.u. requirement no matter how great," the company said.

Heat exchangers are offered in aluminized steel, but can also be supplied in stainless steel. The furnaces are available in six models from 75,000 to 300,000 B.t.u. (input).

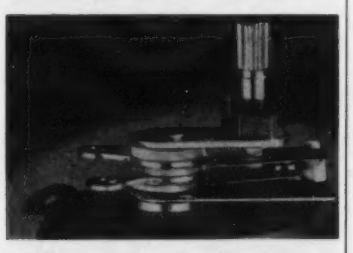
Smoke Generator Pinpoints Duct Leaks

● The "Superior" smoke generator for pinpointing leaks in ductwork, boilers, tanks, and similar enclosures is available from Superior Signal Co., Inc., Dept. AH&RN, 6 Colefax St., South River, N. J.

"Seconds after the smoke generator is ignited, the easily visible smoke issues through any openings that are present—even tiny holes that are invisible to the naked eye," the company said. "The odor of escaping smoke gives a further, inescapable warning of leaks. After the test is completed, ventilation quickly disperses and dissipates the smoke.

"The Superior smoke generator leaves no residue to stain clothing and the interior of buildings. It is non-toxic and will not corrode metals."

Prices vary from $3.25 per dozen for the one-half minute smoke generator (4,000 cu. ft. of smoke) to $3 each for the Superior smoke grenade (130,000 cu. ft. of smoke).



Thermostat Provides Make Break Control

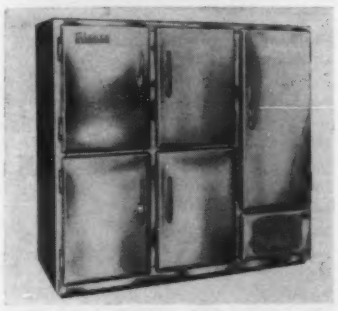
● A positive-off thermostat, permitting cut-out of thermostatic control through manual operation of the adjusting stem, has been developed on a new principle and patent applied for by Norwalk Thermostat Co., Dept. AH&RN, 524 Woodlawn Ave., N., Norwalk, Ohio.

The new design is known as a Type AP. It provides positive make break control of electrical circuits in response to temperature changes, and is designed for use with heating and ventilating equipment, appliances, vending machines, manufacturing machinery, etc.

The restricting device providing the "off" feature can be used either to cut out the thermostatic control altogether, or to limit the lower range of operation of the thermostat.

More details on the products described on these pages may be obtained by writing the manufacturer at the address given in each story.

Refrigerator Interior Fully Interchangeable



● The "Glenco Guardian" tray file refrigerator easily adapts itself to encompass every operation and installation, the interior being fully interchangeable, according to Glenco Refrigeration Corp., Dept. AH&RN, Janney & Ann Sts., Philadelphia 34.

Roll-out shelves, drawers, and meat rails offer full utilization of interior capacity, it was stated.

New interior pilasters accommodate both standard stationary shelves and/or adjustable, removable slides which accommodate one 18 in. by 26 in. bake pan or one 14 in. by 18 in. tray (on pass through models, two 14 in. by 18 in. trays can be used per pair slides).

Two No. 165 meat pans can be used on one pair of slides offering greater efficiency and handling ease of bulb food loading and storage, the company said.

Add-on accessories can be applied to the interior as operations change.

Solar Shading Grille

● Introduction of "Alshade," a new solar shading and decorative grille, was announced by Aluminum Co. of America, Dept. AHRN, 721 Alcoa Bldg., Pittsburgh 19.

Alshade is currently available in a "Shad-O-Wheel" version. Three variations of this pattern are now being produced. Alshade will be priced on a square-foot basis, ranging from $2.50 to $4.

Dewar Flask Chilled Mechanically to -140°

● The Serfass cold trap, a mechanically refrigerated dewar flask that "eliminates the need for dry ice and acetone and automatically provides temperatures down to -140° F." has been introduced by the Serfass Corp., a subsidiary of Milton Roy Co., Dept. AH&RN, 1300 East Mermaid Lane, Philadelphia 18.

Weighing but 148 lbs., the mechanical refrigeration unit is attached to the dewar flask by a 6-ft. long flexible metal hose. All exterior surfaces including the hose vary little from room temperature, the manufacturer points out.

The cold trap can be used by research laboratories requiring temperatures in the -50° to -140° F. range and is also suitable for freeze drying applications and for shrink-fitting precision parts such as gears onto shafts, according to the announcement.

HEATWAVE COMES TO DALLAS IN FEBRUARY

FOR THE 2ND SOUTHWEST HEATING AND AIR CONDITIONING EXPOSITION FEBRUARY 1-4

Southwest Manufacturing Company will present their complete line of year round HEATWAVE air conditioning equipment—gas heating, electrical refrigeration, and heat pump! Plan your schedule to visit Booth 614.

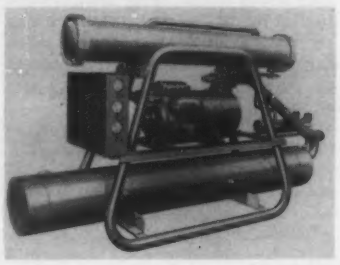
Shown is the Heatwave 100,000 BTU gas-fired HiBoy Furnace with recessed evaporator coil, 1650 CFM. Compressor-condenser unit is 4 horsepower. A real combination for the Southwest area, by Southwest Manufacturing Company!

HEATWAVE

Heatwave is manufactured by The Southwest Mfg. Co. of Aurora, Missouri, a subsidiary of The F. E. Myers & Bro. Co. of Ashland, Ohio, manufacturers of the famous Myers Pump.

Trane Redesigns 'Cold Generator' Chiller

● Its "Reciprocating Cold Generator," package water chiller for comfort and process applications, has been redesigned "in order to make the unit even more dependable, quiet, and easy to maintain," according to The Trane Co., Dept. AH&RN, La Crosse, Wis.



Much of this was achieved through the use of a newly-developed Trane hermetic reciprocating compressor as the heart of the unit, the company said. The new units are available in 10 sizes, from 10 to 100 tons. All models are small enough to pass through a standard 36-in. wide commercial door.

The Cold Generator is designed around a hermetic model of the Trane reciprocating compressor. The compressor, designed for Refrigerant-22 and Refrigerant-12, operates at 1,750 r.p.m. It has a volumetric efficiency of 85% at 40° F. suction and 105° F. condensing temperatures, it was stated.

The hermetic compressor is mounted in the Cold Generator on a waist-high support, which makes it easily accessible from all sides. Valves and controls are located to facilitate adjustment.

Another new component of the Cold Generator is the Trane evaporator. This unit is of the direct expansion type, with the refrigerant in the tubes and the water in the shell. Shell-and-tube condensers are also used in Cold Generators.

All Cold Generators can be furnished with either pneumatic or electric controls.

Put 'Leak Lock' In New Rigid Container

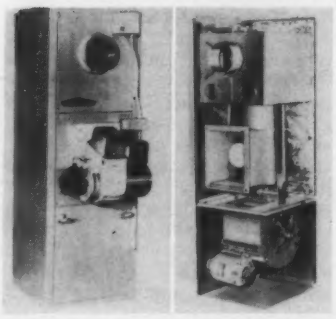
● Adoption of a new, 4-oz. metal container for "Leak Lock," the company's flexible, joint-sealing compound, has been announced by Highside Chemicals, Inc., Dept. AH&RN, 10 Colfax Ave., Clifton, N. J.

The new container is designed to fill the need for a rigid container with a "built-in" applicator, according to the company. An additional advantage offered by the new container is its ease of application in spots inaccessible to the Leak Lock squeeze-tube, such as the inside threads of small diameter pipe, the company reported.

The applicator is permanently attached to the inside of the can top.

With the addition of the new applicator-can, it is now available in containers "appropriate for every industrial use," including 1⅓-oz. squeeze tubes, 4-oz. applicator cans, pint and 10-lb. cans.

Majestic Oil Furnace Is Only 18 In. Wide



● A compact new oil furnace 18 in. wide and a newly-styled basement lo-boy oil or gas furnace have been introduced with its 1960 line by the Heating & Air Conditioning Div., The Majestic Co., Dept. AH&RN, Huntington, Ind.

The 18-in. furnace is being produced in upflow and downflow models for the small homes market as well as for larger homes using the two-furnace system. The furnaces—designated No. U-18-0 for upflow and D-18-0 for downflow—have a number of features found in the larger Majestic furnaces, it was stated by the manufacturer.

The combustion chamber of both the new 18-in. models is lined with Carborundum Co.'s "Fiberfrax," an aluminum silicate fiber with high heat resistance and noise-deadening properties, the company said. The inside surfaces of the outer casing are coated with Majestic's "Quiet-Cote" under-coating for corrosion resistance and muffling of sound.

The newly-designed casing of the basement lo-boy models features an expanded metal front that encloses controls and eliminates any projecting components. These units are available in three sizes in Majestic's "Supreme" series.

Now...in Good Housekeeping
and backed by the famous
Guaranty Seal

REPLACEMENT OR REFUND OF MONEY
Guaranteed by
Good Housekeeping
IF NOT AS ADVERTISED THEREIN

your best customers are being
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...kill 99+% of germs trapped to create new
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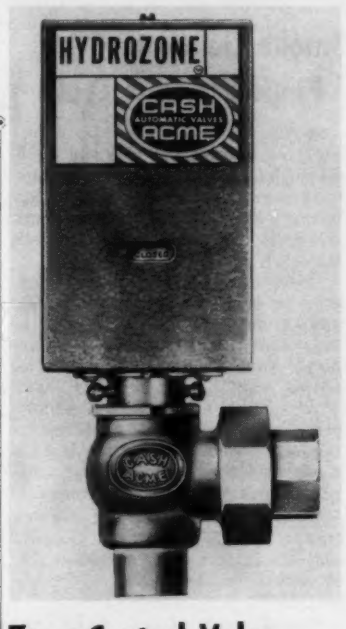
Ask your distributor or write to **FRAM** *Aire Corporation* • Division of FRAM Corporation, Providence 16, R. I.



Zone Control Valve For Hydronics Systems

● A new motorized zone control valve for use on hydronic heating and cooling systems and for steam up to 10 p.s.i. has been announced by A. W. Cash Valve Mfg. Corp., Dept. AH&RN, P. O. Box 191, Decatur, Ill.

Designated the "Hydrozone" motorized valve, the valve features four body types for varying job conditions. Valve has a visual valve stem indicator, and is easily set for manual operation in case of power failure, it was stated.

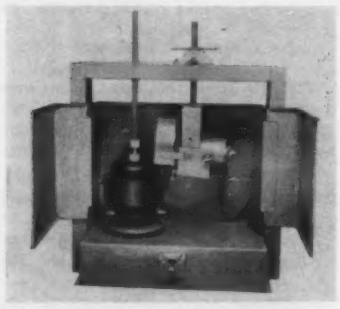
"A special Viton 'O' ring (patent pending) is used to eliminate leaking at valve stem," the company said. "Valve has 100% shut-off feature, allowing it to be used on low pressure steam systems. Angle body pattern allows flow through valve in any direction.

"The Hydrozone motorized valves have all bronze bodies, and depending upon body type, can be supplied with sweat copper body connection and sweat copper union connection; sweat copper body connection, female iron pipe union connection; female iron pipe body connection, sweat copper union connection; female iron body connection, female iron pipe union connection. Hydrozone motorized valves are currently available in ¾ in. sizes; 1 in. and 1¼ in. sizes available in 90 days."

Want More Details?

ADDITIONAL details on products that are described on these pages may be obtained by writing the manufacturer at the address given in each What's New story.

Tell him: "AH&RN sent me!"



Unit Opens 14 In. Dia. Hermetic Compressors

● A new patented Junior Model hermetic compressor opener has been announced by Frankell Mfg. Co., Inc., Dept. AH&RN, 862 Newark Ave., Jersey City 6, N. J.

"This unit is designed to automatically open any compressor up to 14 in. in diameter—whether it's round, oval, or irregular in shape, whether it's off center or on center, whether it's a top weld or side weld—and it takes just a few minutes of a man's time to operate," the announcement said. "No experience is needed.

"Turn table with clamp can be used to re-weld opened compressors."

Size is 33 in. long by 34 in. high by 15 in. deep. Approximate weight, 135 lbs. Price $397, factory, New Jersey.

Plastic Humidifier Used In Return Ducts

● A reinforced plastic humidifier for use in return air duct of warm air furnaces and in commercial and industrial applications is offered by Kauffman Air Conditioning Co., Dept. AH&RN, 4336 W. Pine Blvd., St. Louis 8.

The Type "A" humidifier weighs 2 lbs., has a 12-in. diameter, and is 12 in. high. Capacity ranges from ½ to 3½ g.p.h., it was stated.

The company said there is "nothing to rust, no moving parts, nothing to wear out." The unit can be automatically controlled at any humidity desired by humidistat and solenoid control valve.

Brass Pumps Operate Submerged In Fluids

● Small brass pumps designed to operate while fully or partially submerged in lubricant fluids and a variety of other liquids have been introduced by Thomas Beckett & Co., Inc., Dept. AH&RN, 2521 Willowbrook Rd., Dallas, Texas.

The fractional-horsepower electric pumps are being used in the water circulating system for ice-making machines and such applications as display fountains, beverage boxes, aquariums, milk coolers, and advertising displays.

The pump housings and covers are fabricated from Western Yellow Brass Alloy No. 30 supplied by Olin Mathieson Chemical Corp.

Acme Offers Five Small PAC Economy Models

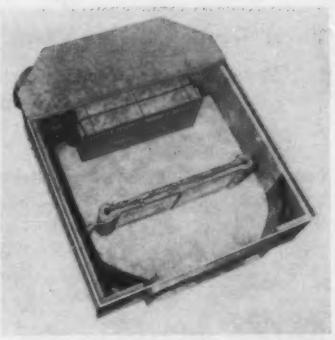
● Five small economy models have been added to the basic PAC line of packaged air conditioners by Acme Industries, Inc., Dept. AH&RN, 600 N. Mechanic St., Jackson, Mich.

The five PAC-B models, all of the evaporative condenser type, fill out a series of compact models, it was stated. These new models are in capacities of 25, 30, 40, 50, and 60 tons.

All feature smaller outside casings, and include multiple compressor units. They are equipped with 10 and 15-hp. compressors which through a two-step thermostat handle partial loads by cutting in or out.

Also available are four-step units with two thermostats. In both systems a small delay in timing allows succeeding compressor units to enter the phase in sequence.

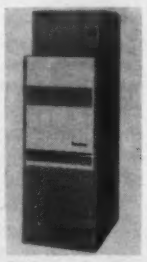
Valve Attenuator Serves Dual Duct Systems



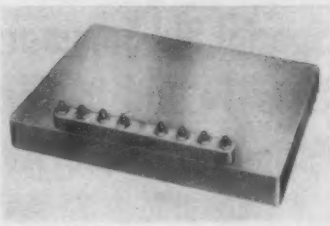
● The "Kno-Draft" Series 45P, a new valve attenuator designed especially for use in dual duct, constant volume high velocity air distribution systems, is now available from Connor Engineering Corp., Dept. AH&RN, Danbury, Conn.

The company said features include "direct pneumatic activation of valves and controls, eliminating the need for any motors or linkage; acute sensitivity to slightest variation in control pressure, ensuring true linearity, completely without hysteresis; and no hot-cold air stratification.

"Additionally, the Series 45P's operation is ultra-quiet, and it is calibrated for capacity determination."



FRASER & JOHNSTON CO has announced for 1960 a complete new line of gas-fired furnaces, evaporators, condensing units, reverse cycle heat pumps, air handling units, and self-contained and remote units up to 15 tons. Shown here is a downflow furnace with matching slide-out evaporator assembly. The line is being shown for the first time at the Southwest Exposition in Dallas.



Aluminum Ice Plates Cool Beverages

● Availability of four-circuit cast aluminum ice plates has been announced by Heat-X, Inc., subsidiary of Dunham-Bush, Inc., Dept. AH&RN, 179 South St., West Hartford, Conn.

Designed for cooling carbonated or non-carbonated beverages, these plates feature stainless steel tubing, with replaceable type connectors, embedded in a flat aluminum plate. Units are available in sizes from 8 in. by 12 in. to 18 in. by 20 in., with one to four circuits, according to the manufacturer.

BEST BET YET...

For commercial refrigeration and air conditioning applications

Ranco "O" Series
Replacement Controls

WIDE APPLICATION: Available in temperature, low-pressure, high-pressure, dual-pressure and dual-temperature models—for a vast array of *general* refrigeration and air conditioning applications. *Special installations* include: ice cream cabinets, ice cube machines, milk coolers, walk-in units, signal circuits, display cases, wide-cycle defrost systems, and others.

UNLIMITED VERSATILITY: Variations include fixed and adjustable differentials, operation on rise or drop in temperature or pressure, automatic or with manual reset, cut-out and cut-in ranges, capillary tubes with sweat or flared fittings.

LATEST DESIGN FEATURES include stepped-up electrical rating—for improved performance, new style cover—for rapid identification in case nameplate is detached, easy installation features—including front access to terminals on most models.

Get Ranco Wall Chart No. 1727 from your wholesaler—(not available from the factory). It lists "O" series controls for every installation.

MODEL 010-1401
Single Pressure Control

Ranco®
INCORPORATED
Columbus 1, Ohio

RANCO CONTROLS

Special Bid Summary Forms and Checking Lists To Aid In Correct, Profitable Estimates Made Available by NAPC

WASHINGTON, D. C.—Special forms for bid summaries and bidding check lists, to serve as a guide for plumbing, heating, and air conditioning contract estimates, have been developed by The Minneapolis and St. Paul Associations of Plumbing, Heating, and Mechanical Contractors.

The substance of these bid summary and bidding check list forms have been released through the National Association of Plumbing Contractors as a guide for correct and profitable estimates on such contracts.

This material includes:

Bid Summary Form.

Check List No. 1 Direct Job Costs. (This category of costs includes actual materials, apparatus, productive field payroll, and supervision consisting of superintendent, foremen, and a variety of other items.)

Check List No. 2 Miscellaneous Direct Job Costs. (These are other costs directly computable and chargeable to the specific job being bid.)

Check List No. 3 Overhead Costs. (These items are applicable to all jobs and not directly allocable to any one particular job which the contractor may be bidding. For example: estimating services and home office rent.)

Bid Summary

Direct Job Costs—(See Check List No. 1)		
Materials and Apparatus	$———	
Escalation	$———	
		$———
Labor—including all supervision	$———	
Increases	$———	
Premium Time	$———	
Fringe Benefits	$———	
		$———
Insurance and taxes on labor		$———
Miscellaneous Direct Job Costs: (See Check List No. 2)		$———
Sub-Total		$———
Sub-Contracts		$———
Sub-Total		$———
Overhead and Profit		$———
Sub-Total		$———
Bond		$———
Bid		$———

Check List No. 1
Direct Job Costs

EXPLANATION: This category of costs includes actual materials, apparatus, productive field payroll, and supervision consisting of superintendent, foremen, etc., and usually includes items such as:

1. Materials and equipment and margin for escalation.
2. Labor—Regulation and premium time and any anticipated increases, for: Journeymen such as Plumbers, Fitters, Laborers, Apprentices, Truck Drivers, Equipment Operators, etc. Supervision such as—Superintendent, General and Sub-Foremen for each craft.
3. Fringe Benefits on Labor—
   (a) Apprenticeship Fund
   (b) Credit Union
   (c) Health and Welfare
   (d) Pensions
   (e) Vacations
4. Travel and Living Expenses—
   (a) Union Men
   (b) Home Office Supervision
5. Engineering—Shop fabrication detailing, etc.
6. Office personnel employed at the field office—timekeepers, clerks, engineers, etc.
7. Insurance and taxes on all job Labor.
8. Welding Consumables—rod, oxygen, acetylene, demurrage on cylinders, etc.
9. Setting and alignment of equipment.
10. Cutting and patching.
11. Excavation, backfill, and compaction.
12. Foundation and bases.
13. Insto gas and Prestolite.
14. Lead and oakum.
15. Painting and tagging job.
16. Sleeves and inserts.
17. Solder and flux.
18. Soil tests.
19. Freight and express on materials.
20. Testing and adjusting systems.
21. Final job inspection and punch list.
22. Final job cleanup.
23. Sub-contracts and bonding of subs, when required.

Check List No. 2
Miscellaneous Direct Job Costs

EXPLANATION: These are other costs directly computable and chargeable to the specific job being bid such as:

1. Special risk insurance.
2. Shop drawings.
3. Scaffolding and rigging.
4. Equipment rental or depreciation.
5. Small tools—.....% of total labor.
6. Special tools and equipment.
7. Distribution materials on job site.
8. Drayage.
9. Mobile equipment—assigned to the job such as trucks, cars, etc.

Engineering the temperature...

WITH RECOLD IN THE LOS ANGELES SPORTS ARENA

The new 22,400-seat Memorial Sports Arena establishes Los Angeles as the sports capitol of the nation. Recold units supply over 672,800 CFM of heating and air conditioning for this vast building.

RECOLD CORPORATION
7250 East Slauson Avenue, Los Angeles 22, California

RECOLD

Designed by: Welton Becket & Associates, Architects & Engineers
Air-Conditioning Installed by Western Air & Refrigeration, Inc.

Removes MORE SCALE per Dollar Spent!

VAPCO SCALE REMOVER

The activated acid in powder form containing inhibitor, wetting agent and algaecide for a COMPLETE cleaning job under the most severe conditions. Easy on galvanize — safe for equipment. Keeps head pressure down — efficiency UP! 10 to 50 pound drums with "Tel-Action" pH indicators.

VAPCO-HIB

Make your own cleaner with VAPCO-HIB. Added to muriatic acid, VAPCO-HIB increases the acid action, yet provides outstanding protection to metals including galvanize. Supplied in 8 and 32 ounce bottles and bulk.

Vapco QUALITY PRODUCTS

Complete literature on request or see your dealer TODAY!

GARMAN COMPANY
ST. LOUIS 25, MO.

10. Gas, oil, repairs for—
    (a) Mobile equipment on job
    (b) Welding machines, pumps, etc.
11. Certification of Welders.
12. X-Ray expense for welding tests.
13. Electric power and light—as prorated against you by specifications.
14. Electric switchgear and wiring expense for—welders and power tools.
15. Testing materials.
16. Temporary heating—labor, insurance and taxes, materials, etc.
17. Temporary toilet facilities.
18. Temporary water.
19. Job telephone, telegrams, and postage.
20. Job shacks—trailers, shacks, warehousing, etc.,—cost on and off job.
21. Freight on tools and equipment—on and off job.
22. Delay penalties.
23. Job photographs.
24. Safety requirements.
25. Interest on borrowed funds—to finance and carry job.
26. Permits and licenses.
27. Payment and performance bond.

Check List No. 3
Overhead Costs

EXPLANATION: These items are applicable to all jobs and not directly allocable to any one particular job you may be bidding. For example: estimating services and home office rent. This item of cost usually includes all expenses such as:

1. Accounting and legal.
2. Salaries—Officers
   Others—estimators, engineers, bookkeepers, clerks, etc.
3. Automobiles and truck expense—(for amounts not charged to specific job).
4. Civil Organizations.
5. Contributions.
6. Depreciation.
7. Dues and licenses.
8. Entertainment.
9. Interest.
10. Advertising.
11. Insurance—
    (a) General such as: auto and trucks, fire, floaters, etc.
    (b) Payroll.
12. Heat, light, power, and water.
13. Real and personal property taxes and payroll.
14. Telephones and telegrams—intercoms, extensions, and regular services.
15. Janitor and laundry services.
16. Maintenance of buildings, etc.—offices and warehouses.
17. Repairs and rental of equipment.
18. Stationery, supplies, and postage.
19. Warehouse expense.
20. Small tools.
21. Travel and promotion.
22. Miscellaneous.
23. Other items.

Shenk Appointed to American-Standard Post

NEW YORK CITY—Appointment of Louis G. Shenk, Jr., as manager of heating and cooling product lines has been announced by D. J. Quinn, vice president of sales and marketing for the Plumbing & Heating Div. of American-Standard.

L. Shenk, Jr.

He succeeds Harold C. Day, who will continue with the company in a consulting capacity until his retirement next year.

Shenk joined American-Standard in 1949 as a sales trainee, and the following year was assigned a sales territory in the New York office. Following various sales assignments in the Long Island area, he was appointed assistant to the manager of heating and cooling products in 1955. He became manager of boiler and radiator products the following year.

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 35)

it before we can react to stop it.

"Having invented this gadget, we cannot wait until we use it. We think we can 'leave it to George' or to Metal Mike, believing we can pull out the plug before it obliterates us. This is a false hope."

Philosophy vs. TV Ratings

To be sure, our country needs more mathematicians and scientists—not only to keep pace with Space, but to continue our business and industrial progress.

Much more important: *Civilization Itself Needs More Philosophers, Administrators, and Communicators.*

Young men who exhibit early talents for these arts and facilities should concentrate their studies on history, geopolitics, literature, music, art, and communicative skills.

All these Students of People should preserve and advance *and utilize* the entire body of knowledge mankind has accumulated, down through the centuries, about dealing with human beings.

Few are born with innate talents for mathematics. Possibly even fewer have inborn proclivities for *understanding* human beings, and *persuading* them.

Young men who do have such talents should be encouraged—because they will be even more needed in the teetery, parlous, dangerous years ahead of us than ever before.

Arkla Consolidates Humphrey Heater Output With Other Production

LITTLE ROCK, Ark. — Consolidation of Humphrey gas heaters into the production of its expanding line of gas equipment has been achieved by Arkla Air Conditioning Corp., according to W. G. Wepfer, Arkla general sales manager.

Arkla purchased the Humphrey heater business from General Gas Light Co., of Kalamazoo, Mich., last spring. Humphrey's production facilities have been moved from Kalamazoo to Arkla's Evansville, Ind. plant where they have been dovetailed with the manufacture of Arkla-Servel "Sun Valley" gas air conditioners, 25-ton water chillers and gas lights.

"The acquisition of Humphrey," said Wepfer, "was in keeping with Arkla's plans to expand into a full range of gas-operated heating and air conditioning products. This we are doing through two avenues:

"First, by redesigning and enlarging the 50-year-old Humphrey line to keep abreast with the latest developments in the heating field. Second, by broadening and improving our Arkla-Servel equipment for heating and cooling."

The Humphrey line, including suspended unit heaters, radiant-fire heaters, room circulators, and duct furnaces, is being marketed nationwide by dealers, manufacturers' representatives, distributors, and gas companies.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Easy as wrapping a bun around a weenie

LABOR COSTS FOR INSULATING LINES CUT IN HALF BY B.F.GOODRICH CELL-TITE INSULATION TUBING

EVEN when pipe has already been connected, B.F.Goodrich insulation tubing can be slit, snapped on and cemented in seconds. And, if you prefer, you can get it pre-slit for even faster installation. Slitting is unnecessary for new lines—it slips on straight or bent pipe as easily as a ring on your finger. Installation is so fast that labor costs for insulating pipe can be cut 50% or more over old-fashioned twine-wrapping, skirting and other slower methods.

B.F.Goodrich insulation tubing is made of a tough, flexible rubber with millions of uniform, non-connecting cells that seal out air and moisture. It can be used for insulating pipes carrying hot or cold liquids at temperatures ranging from —20°F to 200°F. Clean and easy to work with, doesn't rub off, chip or crumble. It comes in lengths up to 50 feet, so less joints are needed, scrap is reduced to a minimum.

This BFG insulation is also self-extinguishing, so it can be installed on copper tubing before sweat fittings are made—tubing is merely pushed back and held by clamps while joint is soldered.

Try this labor-saving insulation on your next job. For full information on BFG insulation tubing, call your B.F.Goodrich distributor, or contact *The B.F.Goodrich Company, 180 Derby Place, Shelton, Conn.*

INSULATION TUBING BY B.F.Goodrich

Power Tools – *Sharp Weapons for Fighting Price Competition*

By George M. Hanning

DETROIT — As any good heating and air conditioning contractor knows, time and speed of operation are two important factors in meeting price competition—at a profit.

Anything a contractor can do to cut time spent on an installation or service call and speed up assembly of duct systems will reflect directly in his ability to meet price competition, get more work, and increase profit.

Al Keats, president of King Cole Heating & Cooling Co., has found a powerful answer to this problem in power tools.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Power tools, declares Keats, have enabled him to reduce his costs per job and do a better job than by hand methods.

Amazing reductions in costs are effected in his sheet metal shop through the use of such power tools as a collaring machine, an electric hammer, an electric stitcher, an electric slitter, and an electric bandsaw.

"These are not unusual tools for a sheet metal shop," Keats commented. "Some large shops have these and many more. But many heating and air conditioning contractors who could well use them don't.

"The most expensive machine in my shop cost only $2,000 and all have paid for themselves in a matter of months. We started buying power tools one at a time, six years ago and you can bet I am going to buy more as the need arises."

Keats does not consider himself one of the larger heating and cooling contractors in Detroit, though he installs an average of 1,300 furnaces a year in addition to sub-contracting installation and service for other sales outlets.

Any contractor who does enough sheet metal work to warrant setting up his own shop can use power tools to advantage, he believes.

Keats has nine men working in his shop, under the supervision of John Klof, general superintendent, and George Boyle, shop superintendent.

A pictorial tour around the King Cole shop will show the tools Keats uses and what savings they bring him:

CHECKING a BLUEPRINT preparatory to scheduling a job through the shop at King Cole Heating and Cooling are (r. to l.) John Klof, general superintendent; Al Keats, president; and George Boyle, shop superintendent. Advance scheduling is important to getting the most out of power tools in terms of time and money saved.

ELECTRIC BAND SAW. Jim Bevington can clamp together 30 pieces of galvanized metal and cut out 30 shapes in the time that it would take to cut a single piece with a hand saw. And he can do it with less strain and effort.

ELECTRIC STITCHER. Rex Copeland uses a foot-operated electric stitcher to put staples into a boot. Before he had to hammer and rivet the pieces together, a job that calls for three hands.

The new 1960 MARK IV Monitor

MARK IV backs you with a national service organization.

Factory trained servicemen coast to coast . . . almost 2,000 outlets in 48 states. Regional factory service schools each year. Generous warranty, but claims are comparatively rare because . . .

MARK IV backs you with a soundly engineered, dependably built unit.

By actual test MARK IV delivers more cold air, gives quicker cool-down than any other unit . . . including factory installations. This progressive company has an old fashioned feeling that its reputation rides with every unit.

MARK IV backs you with the most complete set of sales aids in the industry.

Literature that projects quality. Co-op ad program. Point-of-purchase signs and displays of every sort.

WRITE FOR INFORMATION ABOUT A MARK IV DISTRIBUTORSHIP.

MARK IV DIVISION
JOHN E. MITCHELL COMPANY
3800 COMMERCE STREET
DALLAS, TEXAS

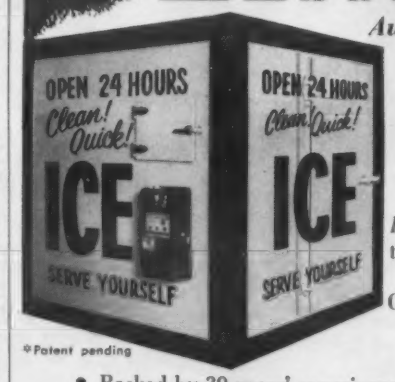
WHILE ATTENDING THE SOUTHWEST SHOW IN DALLAS, BE SURE TO VISIT OUR PLANT—PHONE TA 1-5161

Big Money Maker!

THE DEMAND IS THERE!

HILSON SERVETTE

Automatic, Coin-operated



*Patent pending

ICE VENDOR

Makes and Vends Ice

Designed for drive-ins, gas stations, taverns, beverage stores, resorts, amusement parks, etc. Compact, rugged construction. Exclusive patented* design, vends *more* in *less* space.

- Backed by 30 years' experience in the refrigeration industry.
- Exclusive territory now available.

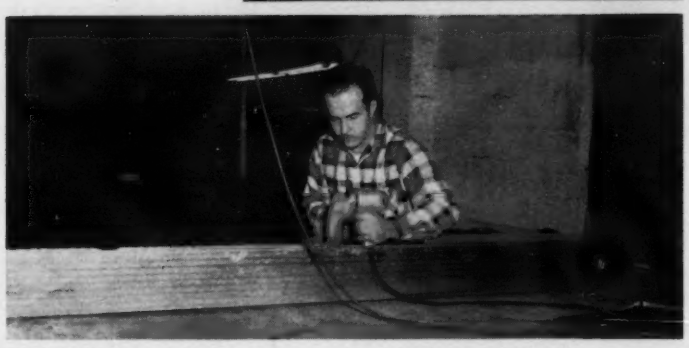
Write, Wire or Phone for Complete Details!

HILSON Industries inc.
5300 Vine St. Cincinnati 17, Ohio Phone: PLaza 1-3282

Saving Time and Money at King Cole

COLLAR MACHINE. In just seconds, Jim Taylor puts a neat, substantial collar on fittings. He inserts the collar into the machine and pushes the boot against it. An eccentric revolves inside the collar, pressing it into the boot. On the simplest fittings, he can save seven to eight minutes over hammering the collar onto the fitting. On more complicated fittings, the time saving is even greater.

ELECTRIC SLITTER. It takes only seconds and a minimum of strain for George Bjerk to slit a 96-in. long sheet of metal. It would take over four times as long and a lot of sweat to do the same job with tin snips.



ELECTRIC HAMMER. In less time than it takes to read this, William Schewee can put a seam on an 8-ft. long duct. By using the electric hammer he saves three to five minutes per duct.

What's Next for Keats?

He is now eyeing a slitter that will cut four different widths of sheet metal at one time.

He has also decided to buy an automatic cleat machine, one that produces fasteners for joining in a good, tight fit two duct sections butted together.

In deciding what to buy, the important criteria are how much time will it save, and which tool will do the job quicker and better.

New Aides To Lengthen Viking Dealer String

CLEVELAND — John A. Green, general sales manager of Viking Air Products, has announced the appointments of Ralph Ellsworth and Charles E. Doerrer to the newly-formed posts of dealer sales promotion manager for Cuyahoga County and for the St. Paul and Minneapolis territory, respectively.

Ellsworth formerly was in the sales departments of Addressograph-Multigraph and Consolidated Paper Co. For the last six years, Doerrer has been in the sales department of the Villaune Steel Center, St. Paul.

The posts Ellsworth and Doerrer will fill are marketing departures for Viking Air Products, in that it has never had sales representatives on the dealer level in these areas. They will work in close cooperation with Viking's wholesalers to build a greater dealer network for Viking products.

Fedders Sees an Air Conditioning Prospect In Every Furnace Buyer

MASPETH, N. Y.—An individualized merchandising program, incorporating mailings and "point of use" advertising, will be employed by Fedders Corp. to encourage the purchase of its remote air conditioner by every owner of a Fedders warm air furnace.

The program was announced by Claude C. Kirk, sales manager of Fedders' Central Residential and Commercial Air Conditioning Dept., as the firm introduced a complete line of remote air conditioners and gas and oil-fired furnaces. These products represent an expansion by Fedders in the residential air conditioning and heating field.

The backbone of the plan is a line of heating furnaces that is designed for the additional of air conditioning "without costly alternations to the furnace." Once this furnace is in the house, the program toward the purchase of the air conditioner begins.

A special registration form will be provided so that the installer of the Fedders furnace will be able to report to the Fedders factory the name and address of the owner.

In the first month of March following the installation, the consumer will be sent a mailing piece from the factory that includes a reply card addressed to the installing contractor. In June, a second piece will be sent.

Two additional mailers will go out during the second summer following the installation and even future mailings are being contemplated. "A furnace owner is a contractor's best air conditioning prospect and we can't afford to neglect him," said Kirk.

The first summer's mailing pieces are already prepared. They both point out the fact that the homeowner is now a user of a Fedders product and how simple it is to add air conditioning.

In addition to this mail campaign, Fedders is supplying a decal to be pasted on the cooling coil cabinet of the heating-cooling furnace that will be a constant reminder that the furnace can be used for air conditioning.

Measuring 6½ by 5¼ in., the decal will include the local dealer's name and telephone number.

To encourage dealers to plan for future air conditioning business, many Fedders distributors will offer the coil cabinets free for a limited time with minimum orders.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

DISTRIBUTOR DAN AND
THE CASE OF THE H-6 LEAK DETECTOR
INSIDE THE H-6 PART I
CAN I REPLACE PARTS IN THIS LEAK DETECTOR EASILY?
YES, ONCE IN A WHILE CERTAIN EXPENDABLE PARTS WILL HAVE TO BE REPLACED, BUT EASILY AND AT LOW COST.
AIR CONDITIONING & REFRIGERATION SERVICE
THE MOST IMPORTANT REPLACEMENT IS THE 'ION SOURCE' HERE IN THE SENSITIVE ELEMENT HOUSING.
"WHEN THE SOURCE LOSES ITS SENSITIVITY, JUST REMOVE THE HOUSING COVER, LOOSEN THESE BLOCKS, AND LIFT OUT THE ION SOURCE."
UNDER NORMAL CONDITIONS, YOU MAY HAVE TO REPLACE THIS SOURCE ONLY ONCE DURING EVERY 100 OPERATING HOURS.
LET THE SLOTS IN THESE BLOCKS GUIDE YOUR POSITIONING THE NEW ION SOURCE... BE SURE THE SOURCE DOESN'T TOUCH THE ION COLLECTOR.
ION COLLECTOR
WHEN RE-ASSEMBLING, TIGHTEN THE SCREWS... BUT NOT TOO MUCH "MUSCLE."
COMING FEBRUARY 15
INSIDE THE H-6 PART II
Watch for more tips from Distributor Dan and...
FOR MORE COMPLETE INFORMATION ON THE TYPE H-6 LEAK DETECTOR, CONTACT YOUR NEAREST AIR CONDITIONING AND REFRIGERATION WHOLESALER: OR SEND THIS COUPON TODAY FOR BULLETIN GEA-6827, TO GENERAL ELECTRIC COMPANY SECTION 595-407 SCHENECTADY 5, N.Y.
U.S. MAIL
NAME
ADDRESS
COMPANY
STATE
INSTRUMENT DEPARTMENT
GENERAL ELECTRIC

'New Concept' In Air Conditioning

66 Beaver St. Office Building System Uses Structure's Framework In Place of Conventional Piping, Ductwork

NEW YORK CITY—What is described as "a new concept in air conditioning and heating system design" has been incorporated in 66 Beaver St., 24-story office building planned for completion in 1961.

According to Henry George Greene, architect for the building, and Sidney W. Barbanel, consulting engineer who has designed the air conditioning layout, the new system utilizes the building framework in place of conventional piping and ductwork.

The basic reasons stated by the architect for the new design are to utilize as little of the rentable space as possible, to provide slimmer and more architecturally pleasing exterior columns. At the same time, the new design concept permits economics of installation, it is claimed.

"To accomplish this design while adhering to the strict building and zoning requirements, a multi-level penthouse has been created on the roof of the building," the announcement pointed out.

"This penthouse contains an absorption refrigeration system, two low pressure steam boilers, and the fan systems required to handle approximately one-half of the building.

"The fan systems for the remaining half of the building are located on the first floor mezzanine area over the main entrance. In addition to using no rentable space for mechanical equipment, the basement of the building was left free.

"In the case of 66 Beaver St., where use of the basement area is being considered as a data processing center for investment firms located in the building, this basement space is particularly important.

"The usual high pressure air conditioning and heating duct design which requires the installation of round ducts at each column was discarded, thus avoiding oversizing of exterior columns. Instead, high pressure ductwork is run from the machine rooms to the various floors in the corners of the building facade.

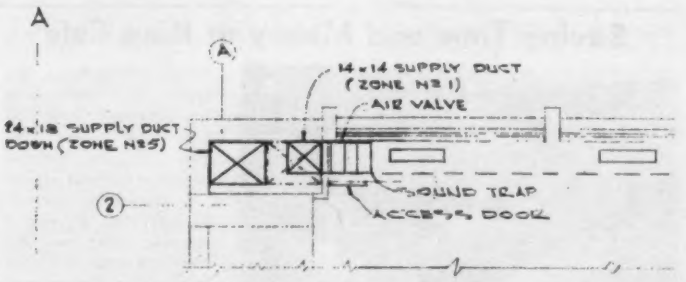
"Horizontal air distribution is accomplished by means of a structural duct located beneath the window. The duct is continuous along the entire periphery and is located between the outer wall and the outside face of the column.

"The actual duct is formed by means of the outside wall, the floor, a gypsum wainscoating face, and the sill on top. There are no sheet metal connections in the duct at all.

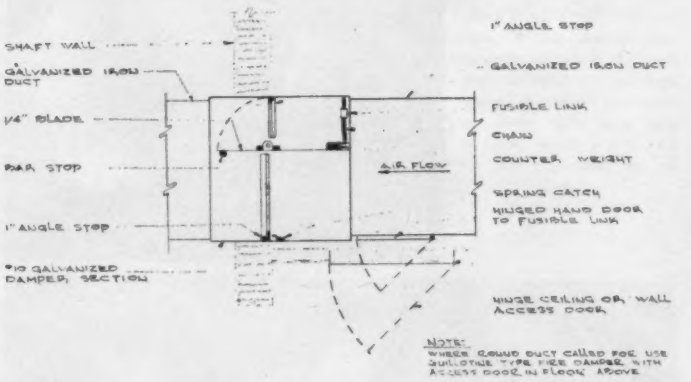
"Both cooled and heated air will be distributed throughout 66 Beaver by means of registers located in the sills on a modular basis. Behind each register is a specially designed pressure and noise reducing valve which will eliminate duct noise as well as inter-office audio transmission. Each register is adjustable.

"The basic system is designed so that the variation in adjustment of the individual registers will have little effect on the overall air balance in the system."

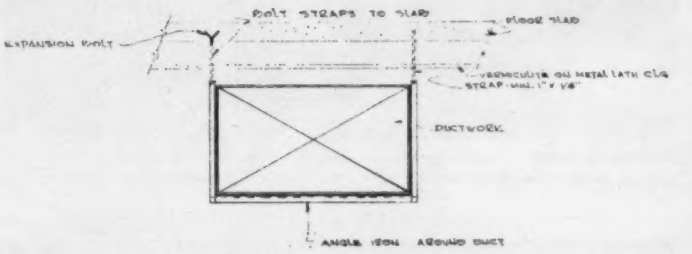
According to the architect, this type of system is one of the first of its kind. By its adoption, for example, there is no piping beyond the machine rooms and partitions along the perimeter can be moved without affecting the system, it was stated. The heating and air conditioning of the interior zones is accomplished by means of a high pressure air distribution system controlled at each floor.



SOME UNUSUAL CONCEPTS for air distribution will be applied in the air conditioning system for the 66 Beach St. building to be constructed in New York City. Principal variation from usual practice will be the use of a structural duct utilizing the building framework rather than metal ductwork to carry the air to a perimeter air distribution system. Drawing above is part plan of an enclosure on one of the upper floors, where the main air supply is brought from a roof penthouse equipment room through high pressure ductwork.



THIS DRAWING SHOWS the detail of the fusible link fire damper in the shaft wall, an important element in the design of a wall enclosure type air distribution system.



WHERE HORIZONTAL DUCTWORK is used in the system, the above drawing shows the detail of the method used for suspending such ductwork.

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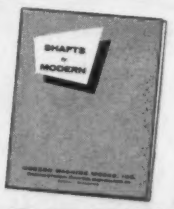

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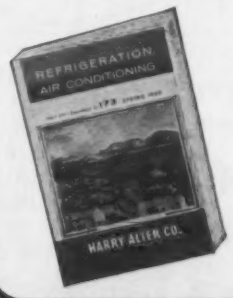

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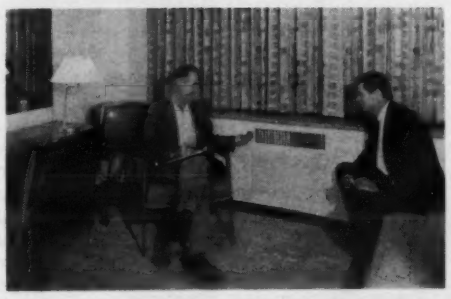
Sheraton-Portland Motor Hotel Uses Heat Pump To Cool Air, Warm Pool

PORTLAND, Ore.—The new Sheraton-Portland hotel near downtown Portland employs a water-source heat pump to provide heating and cooling for its public and guest rooms and to heat water for its swimming pool.

The Airtemp heat pump system also provides most of the hot water needs of the 300-room, nine-story hotel.

Each of the 300 guest rooms is air conditioned with an individually controlled Chrysler Airtemp fan coil unit. Larger air conditioning or air handling units maintain comfortable temperatures in the lobby, restaurants, and other public rooms.

LEFT: GATHERED AROUND heat pump plans at the Sheraton-Portland hotel are (l. to r.) Ray Chewning of J. Donald Kroeker & Associates; G. H. Gay, Airtemp service engineer; James Connor, Wismer & Becker, electrical contractor; Ned Dixey of the Sheraton Corp.; and Harry Pederson, contracting superintendent, J. M. Harder Plumbing & Heating Co.



RIGHT: CHECKING OUT an Airtemp wall unit in one of the guest rooms are Chewning, a heating and ventilating engineer; and Dixey of Sheraton's engineering and construction department.

WELL WATER USED FOR HEAT SOURCE

Heating source is well water. A 16-in. well was drilled to 300-ft. depth. It provides 53.5° F. water the year around.

Ned Dixcy, assistant to Sheraton's senior vice president in charge of engineering and construction, had charge of the Portland engineering and construction project. He said, "We chose a heat pump over more conventional systems because of low power rates in the area and the availability of abundant well water. It should be an exteremly economical operation."

To heat the hotel during winter months, 1,350 g.p.m. of water is pumped from the well and reduced to 47° F. in the Airtemp chiller and heat exchanger. In summer the water is raised to 100° F.

The circulated water system moves 1,150 g.p.m. to the fan coil units and to the plumbing system. Temperature of water for room heating varies with outside temperature. Hot water for bathrooms is provided at 125° F. and boosted in kitchens to near boiling temperature for dishwashing.

Ray C. Shewning of J. Donald Kroeker & Associates, Portland heat and ventilating engineer who participated along with Sheraton and Chrysler personnel in engineering the job, commented, "In summer we will use the system to heat the swimming pool. Since the pool will be in operation when room cooling is required, cost of heating the pool will be just about zero."

Supervising installation and initial operation for Chrysler was G. H. Gay, Airtemp service engineer.

Other local firms associated with the Sheraton-Portland's heat pump are J. M. Harder Plumbing and Heating Co.; Wismer & Becker Electric, contracting engineer; and Church, Newberry, Roehr & Schutte, supervising architect.

BALLROOM AND MEETING ROOMS INCLUDED

The 54th in the Sheraton chain, the Portland unit is designed as a motor hotel. It occupies a large city block with adjacent private parking for more than 300 cars. A large ground floor wing contains a ballroom and three smaller function rooms which can be combined to a banquet capacity of 1,400 people or a meeting capacity of more than 2,000.

Located on the east bank of the Willamette River, the Sheraton-Portland serves as a nucleus of a major shopping center. A large department store branch building is being constructed nearby. Many other shops and service outlets are planned in the immediate area.

Sheet Metal Group To Meet April 21-22

COLUMBUS, Ohio — Fiftieth spring meeting of the National Association of Sheet Metal Distributors will be held at the Deshler-Hilton hotel here April 21 and 22.

The meeting will be preceded by a welcoming reception at 6:30 p.m. Wednesday, April 20, announces Thomas A. Fernley, Jr., executive secretary.

Add Water Chiller To Cool School

CONCORD, Calif.—A chiller added to an existing hydronic heating system did a good job of cooling during the recent unusually warm fall here, reports Joe Baker, mechanical and maintenance head for the Mount Diablo school district.

A hot water heating system with "UniTrane" room units was installed in the administration building completed two years ago.

The system was designed so a chiller for cooling could be added later. Last August, a Bell & Gossett 60-hp. package chiller was installed outdoors. It has a weatherproof housing fabricated at the factory.

Tell Sacramento Group About Motor Use

SACRAMENTO, Calif.—L. E. Long of Wagner Electric Co. developed a better understanding of the use of electric motors in air conditioning and refrigeration as speaker at the January meeting of Sacramento Valley Chapter, American Society of Heating, Refrigerating & Air-Conditioning Engineers.

He stressed problems of design and their solution, using the proper motor and equipment in given situations. Long has been with Wagner since 1934, for 20 years as applications engineer in air conditioning and refrigeration.

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Designing *Better* Ductwork

Basic Techniques for Achieving an Efficient Air Distribution System with a Minimum of Energy Losses

By Carl O. Wood, Manager, Engineering Laboratory
Sturtevant Div., Westinghouse Electric Corp.

BOSTON — The design of ductwork for moving air is intended primarily to produce an efficient system with a minimum of losses. The energy losses in a duct system are of two types. Those classified as frictional are due to the contact of the moving fluid against the walls or surfaces of the container. The friction depends on the roughness of the wall surface, the contact area, the square of the velocity, and the density of the fluid.

The dynamic losses in a system are due to a change in velocity of the fluid such that the conversion between velocity pressure and static pressure is not 100% efficient.

The amount of loss varies with the type of velocity change, e.g.: divergent, convergent, abrupt, gradual, etc., and is generally cataloged in terms of velocity heads.

Of course, in most cases the losses are both frictional and dynamic and so the total loss is their sum. Since the system losses have a direct bearing on both original cost and operational cost, the designer should pay careful attention to the methods of reducing losses.

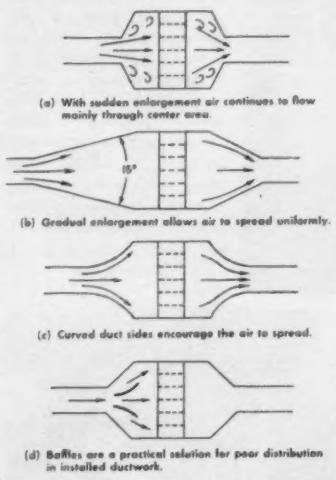

(a) With sudden enlargement air continues to flow mainly through center area.
15°
(b) Gradual enlargement allows air to spread uniformly.
(c) Curved duct sides encourage the air to spread.
(d) Baffles are a practical solution for poor distribution in installed ductwork.

FIG. 1—Air Flow Through Enlarged Duct Sections.

Generally speaking, fractional losses are automatically tied down by restrictions on duct size due to space available, noise limitations, installation costs, or restrictions on equipment location.

However, the dynamic losses can often be reduced by proper attention to duct turns and takeoffs, entrance and exit shapes, approaches, and discharges from fans and equipment.

Avoid Sharp Turns

A good guide to keep in mind in duct design is to avoid whereever possible sharp or sudden changes in air velocity or direction. If the sudden change is necessary then reduce the higher air velocity by using a larger opening or duct.

This is an important point. Since the losses are proportional to the square of the velocity, sizeable reductions in loss can be obtained.

The designer should bear in mind, however, that merely enlarging a passage a short length does not always mean that the air will follow this path.

Fig. 1(a) shows how an enlargement in a duct may be disappointing in the reduction of pressure loss. In a too sudden enlargement the air flow separates from the side walls and the original high velocity continues through the center of the section.

An angle of divergence of 7½° (15° included angle) with the axis is the maximum that the air will follow. A slightly steeper angle is permissible on the converging side because the air will tend to follow the walls more readily when the velocity is increasing.

When space limitations prohibit the longer transition, curved sides as shown at (c) or baffles as at (d) will provide considerable improvement.

Losses At Openings

Air entering an opening from a larger space will produce a vent contracta (Fig. 2(a) as it enters and a considerable loss can result unless the opening is properly rounded.

Another alternative as mentioned before is to increase the opening size and thus reduce the velocity. The free area of the opening is the governing factor. If a grille is used the net area and the shape of the solid parts (e.g., sharp edged or well rounded) determine the velocity and resultant loss.

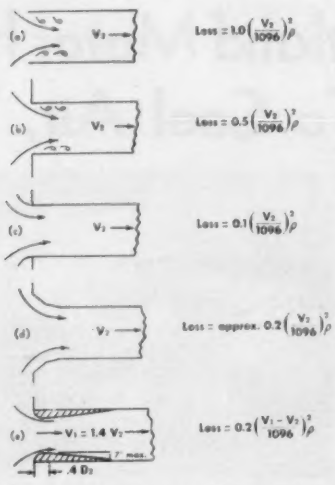

(a) V_2 Loss = $1.0\left(\frac{V_2}{1096}\right)^2\rho$
(b) V_2 Loss = $0.5\left(\frac{V_2}{1096}\right)^2\rho$
(c) V_2 Loss = $0.1\left(\frac{V_2}{1096}\right)^2\rho$
(d) V_2 Loss = approx. $0.2\left(\frac{V_2}{1096}\right)^2\rho$
(e) $V_1 = 1.4\ V_2$ Loss = $0.2\left(\frac{V_1 - V_2}{1096}\right)^2\rho$
1" max.
4 D_2

FIG. 2—Entrance Losses at Duct Openings.

The guiding criteria for reduced losses in ductwork are to hold the velocity low and make any turns gradual. An abrupt change in direction or velocity is undesirable.

The designer must balance the cost of refinements against requirements of the job.

There are, of course, practical limits to the minimum velocity used in ducts. Recommended velocities are given in Fig. 3.

The various pieces of equipment included in a duct system for the purpose of conditioning the air produce losses in varying degrees. The loss is practically always a combination of dynamic and frictional type. For simplicity the two types are usually combined into one and referred to as "pressure loss."

EQUIPMENT	RECOMMENDED VELOCITY RANGE FPM Low Velocity Systems	High Velocity Systems
Outside Air Intakes*	300-1500	300-1500
Filters*	300-1000	300-1000
Heating Coils*	300-1000	300-1000
Cooling Coils*	300- 700	300- 700
Air Washers	500- 750	500- 750
Fan Outlets	1300-2800	1300-2800
Main Ducts	1000-2400	2500-4500
Branch Ducts	600-1600	2000-4000

NOTE: *These velocities are based on total face area, not the net free area.

FIG. 3—Recommended Duct Velocities.

Air cleaning devices, heating and cooling coils, sound attenuators and, in fact, any device placed in the air stream creates a loss of greater or less degree depending on the shape and amount of blockage created.

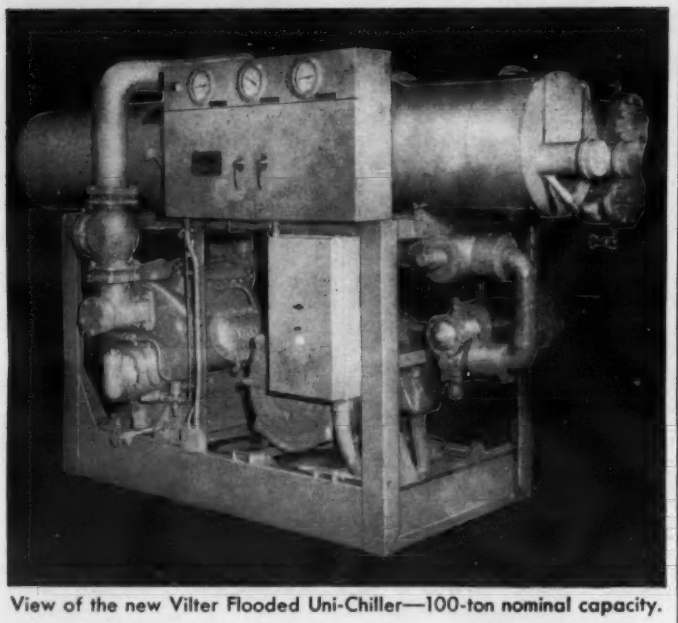
Air cleaners such as the impingement type filter depend for their cleaning action on a change in direction of air flow. This change in addition to the friction loss through the passages results in the loss across the filter. The eliminators used on the downstream side of the air washers also produce a loss in a similar manner.

The losses in heating and cooling coils are due to friction and to turbulence created to promote heat transfer.

The resistance to air flow produced by all this equipment will increase as dirt builds up on the surfaces and thus reduces the free area. Moisture collecting on a cooling coil will also block the air flow unless the coil is properly designed to drain this water off rapidly.

Sound attenuators are made in roughly two forms. Insulation lining a straight duct creates a frictional resistance

Air-conditioning made easy with new space-saving fully flooded Vilter Chiller



View of the new Vilter Flooded Uni-Chiller—100-ton nominal capacity.

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which is somewhat more than a plain metal duct. The other form contains insulated cells of various shapes which create both dynamic and frictional resistance.

The manufacturers of the equipment described above provide the pressure loss data and should be consulted regarding their product.

The approach to and discharge from the fan are important parts of the duct system. They can lead to serious complaints against an otherwise good system and can account for a reduction in fan performance of as much as 25%.

To understand the effect of the approach and discharge, it is well to review the basic fan action. A fan transfers energy to the air by creating a vortex or whirling flow which, in the ideal situation, is converted to static pressure in an orderly and controlled manner. If the duct connections at the fan entrance or exit interfere with this action, then the performance may be altered considerably.

Approaching the Fan

The ideal approach to a fan is such that the air enters the inlet axially without spin in either direction. A spin in the same direction as the fan rotation will reduce the pressure output and will be accompanied by a reduction in horsepower. The abnormally low horsepower is usually a good tip off that an inlet forward spin exists.

A reverse spin at the inlet results in high horsepower with very little increase in pressure. Here again abnormally high horsepower may indicate a reverse spin at the inlet.

An inlet spin may be caused by a number of different approach conditions and the actual cause may not be too obvious. Fig. 4 shows several conditions which will contribute to an inlet spin.

An inlet spin can also be caused by apparatus which produces an unbalanced flow of air into the fan plenum. Heat transfer coils, for instance, which have become excessively dirty on one end might create such a condition.

Correcting Inlet Spin

Fortunately an inlet spin can usually be corrected by use of proper baffling or vanes.

In Fig. 4 (a) and (b) turning vanes should be installed in the elbows and, at (c) vanes should be used in the transformation piece to guide air straight into the inlet box. In all three cases a splitter sheet should be installed at the bottom of the box. Fig. 5 shows these additions by dotted lines.

Of course it can be said that better basic designs in these three cases would be to bring the ducts straight to the fan.

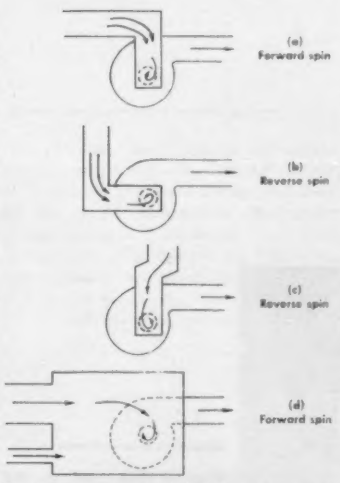

FIG. 4—Conditions Likely to Cause Spin at Fan Inlet.

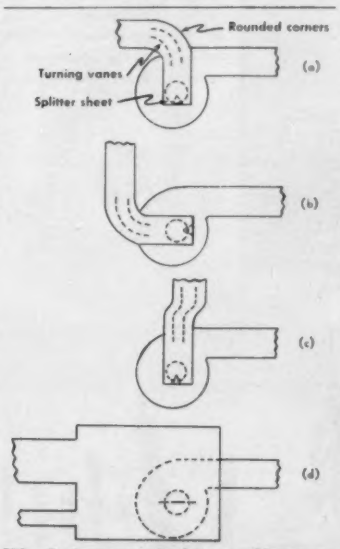

FIG. 5—Improved Designs to Discourage Inlet Spin.

A spin can often be corrected by use of baffles or vanes at the fan inlet. A flat plate across the inlet may be enough to discourage the spin.

The plate must be oriented with the inlet flow so as to discourage the spin without obstructing the flow. If the spin is persistent it may be necessary to install fixed inlet vanes set either axially or to produce just enough counter spin to offset the original.

Occasionally a new system will exhibit a pulsating flow and the fan appears to be "gulping" as though starved for air. Usually the noise and duct vibration created by this action give rise to the first complaint.

Assuming the fan is operating on the stable portion of its curve, the culprit in this case is most often a transient vortex which forms in the inlet and is carried rapidly through the fan where the normal action is severly disrupted. Very shortly thereafter another vortex forms and the maelstrom continues.

The cure for this trouble is often the proper placement of baffling in the inlet box so as to discourage the vortex formation. The air should be guided definitely into the fan, per Fig. 6.

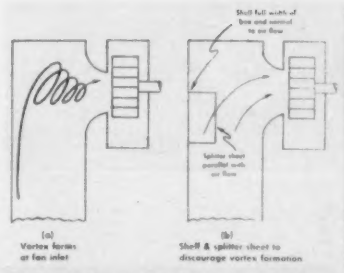

FIG. 6—Vortex Formation In Inlet Box.

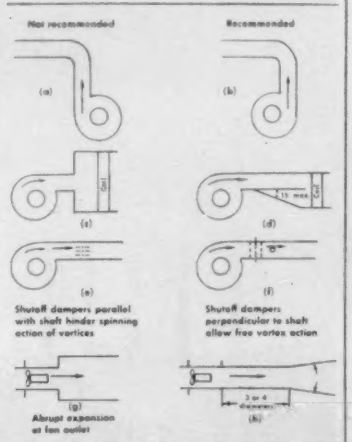

FIG. 7—Fan Discharge Duct Designs.

Pulsating flow may also be caused by wind pressure, particularly with low pressure fans. Good practice favors locating the inlet in a protected location where the full wind blast is not felt.

In rooftop installations equipment having a sizeable resistance, such as finned coils, when installed ahead of the fan will help to reduce pulsation caused by gusty winds.

The air leaving the fan outlet still has a considerable amount of velocity energy not yet converted to static pressure. The energy is in the form of vortices which must be allowed to slow down in a somewhat regular fashion to realize the maximum conversion.

Since there is seldom sufficient room in the actual installation to allow the desired straight duct length, a loss must be charged depending on the severity of deviation from the ideal.

The loss can be approximated in most cases by considering the dynamic losses described above for various section changes.

For instance, if the fan is discharging directly into a large plenum, the loss would be essentially equivalent to the velocity head based on the fan outlet velocity. In fact, it is reasonable to allow this same amount of loss for most discharge conditions which depart radically from the ideal.

Diagrammed in Fig. 7 are a number of different discharge conditions as a guide to good design.

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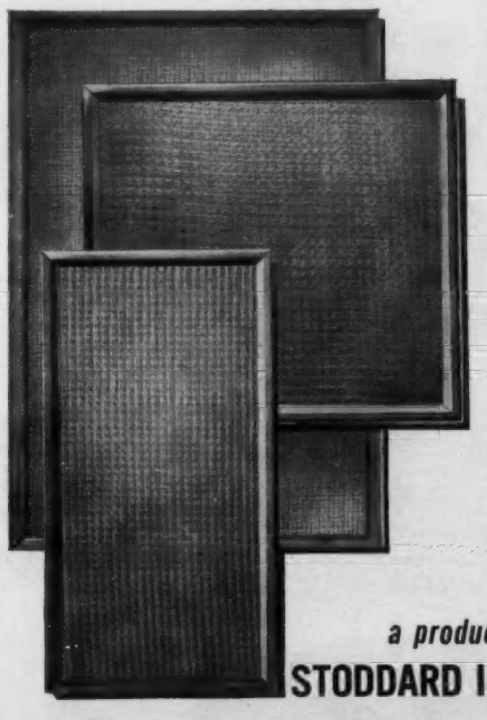

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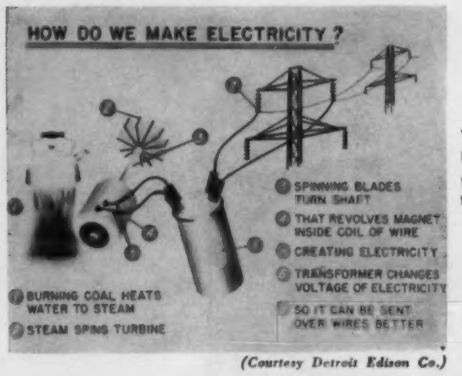
TECH CENTER

by Frank J. Versaci, Technical Editor

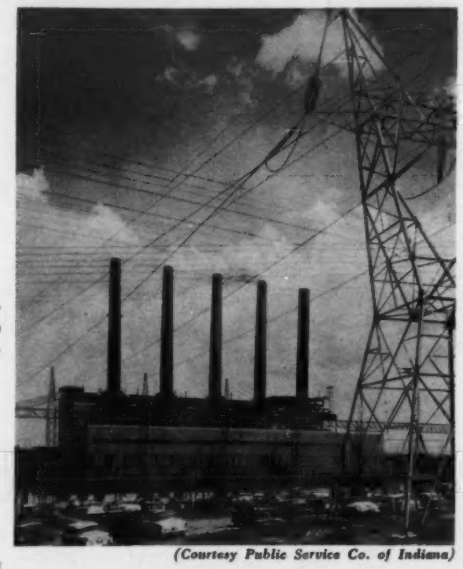
Applied Electrical Theory (9a)

Together with the Jan. 18 article in this electrical series, this picture story gives a practical description of the generation and distribution of electrical power from the generating station to the consumer.


HOW DO WE MAKE ELECTRICITY ?
1 BURNING COAL HEATS WATER TO STEAM
2 STEAM SPINS TURBINE
3 SPINNING BLADES TURN SHAFT
4 THAT REVOLVES MAGNET INSIDE COIL OF WIRE
5 CREATING ELECTRICITY
6 TRANSFORMER CHANGES VOLTAGE OF ELECTRICITY
7 SO IT CAN BE SENT OVER WIRES BETTER

(Courtesy Detroit Edison Co.)

FIG. 1—Simplified, this diagram depicts the steps in the generation and transmission of electricity.

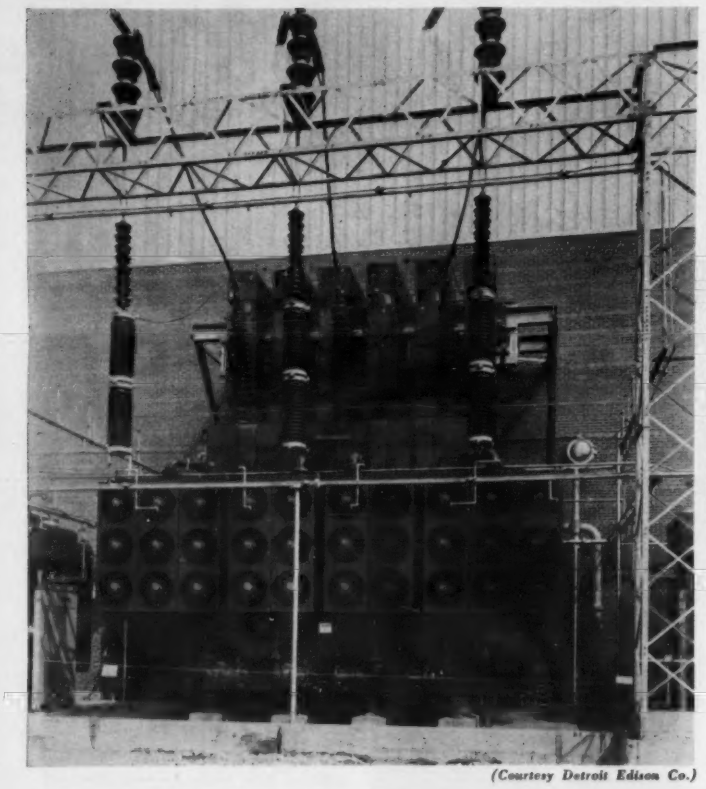


(Courtesy Public Service Co. of Indiana)

FIG. 3—The *mat* is the maze of steel towers and relay equipment, just visible in this photograph in front of the generating station. From here, the electricity is routed over transmission lines.

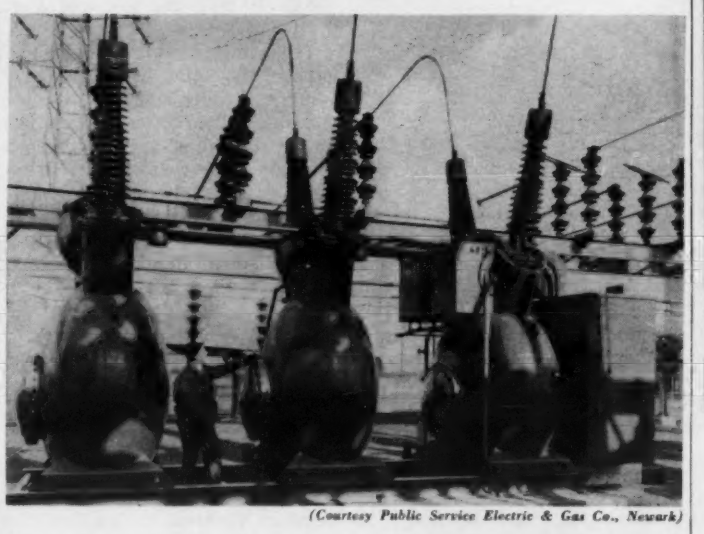
(Courtesy Southwestern Public Service, Amarillo)

FIG. 6—Another form of transmission tower. Each horizontal member carries one 3-phase circuit. Lighter wires in these photographs are ground wires and lightning protectors.



(Courtesy Detroit Edison Co.)

FIG. 2—Through the wall of the generating station come 6 rectangular conduits, each pair carrying one phase of the generated 3-phase voltage. In the giant step-up transformer, the generated voltage is stepped up to 120,000. This transmission voltage leaves the transformer over three *bushings*, and goes over three wires to the mat. The three devices in front which also look like bushings are lightning arrestors. Fans are to help cool the transformer which generates heat while stepping up the voltage.



(Courtesy Public Service Electric & Gas Co., Newark)

FIG. 4—These oil-filled circuit breakers are typical of equipment which is used in the mat. Such devices prevent the entire generating system from being disrupted by failure in any one part served by an individual circuit breaker.

FIG. 5—Transmission towers like this one take the high-voltage electricity from the generating station to substations. Hanging from each insulated support is one wire. This tower is carrying two 3-phase circuits. Each group of 3 hangers on one side carry a single 3-phase circuit.

(Courtesy A G & E Industries)

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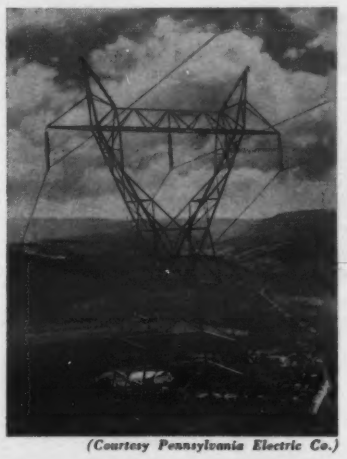
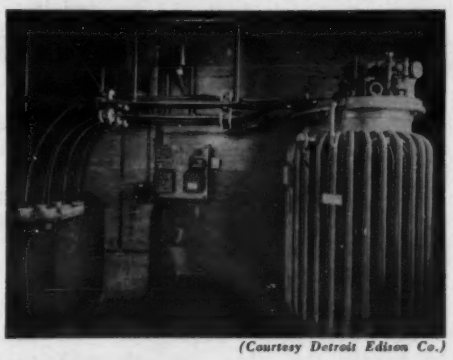


(Courtesy Pennsylvania Electric Co.)

FIG. 7—This tower carries only one 3-phase circuit. Depending on the number of consumers and the resulting total load on the system, transmission lines carry various voltages. Transmission lines from several generating stations are frequently interconnected to lessen the likelihood of a failure on one leg completely cutting off power to consumers.

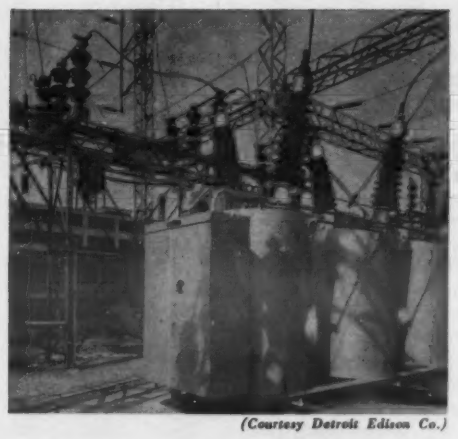
(Courtesy Detroit Edison Co.)

FIG. 8—Transmission lines carry the high voltage power to substations where step-down transformers like these lower the transmission voltage to distribution voltages. Radiator surfaces are used to effect heat transfer from the oil-filled transformer interior to the outside. Transformers of this type always have a higher capacity in winter because they can operate at much lower temperatures.



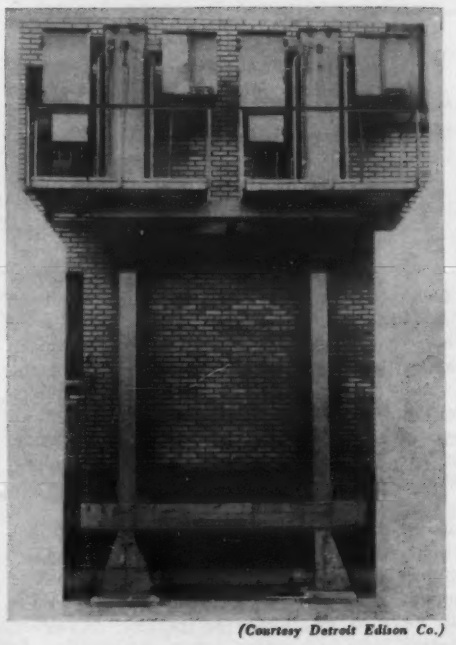
(Courtesy Detroit Edison Co.)

FIG. 9—In many areas, the substations are housed in buildings. This is a voltage regulator used to maintain nearly constant voltage over the system as consumer demand varies from hour to hour.



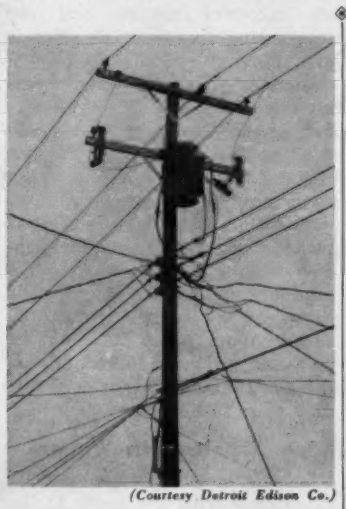
(Courtesy Detroit Edison Co.)

FIG. 10—Oil circuit breakers of this type, while used at generating stations, may also be used at substations to provide control and protection.



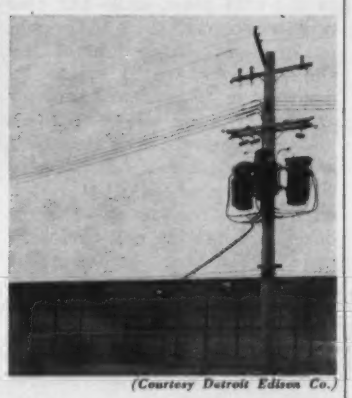
(Courtesy Detroit Edison Co.)

FIG. 11—The 4,800 distribution voltage can go to AC NETWORKS of this type, where the voltage is stepped down to utilization range and distributed to a group of consumers. In downtown areas, the wires to and from the transformers are routed underground.



(Courtesy Detroit Edison Co.)

FIG. 12—Shows a 3-phase, 4,800-volt primary with a single phase transformer. Wires in center of picture are for single-phase, 120/240-volt secondary service.



(Courtesy Detroit Edison Co.)

FIG. 13—Three-phase transformers supplying an industrial consumer with 4-wire service for both three-phase power circuits and single-phase lighting circuits. Lowermost wires in Figs. 12 and 13 are telephone service.

file guide—ELECTRICITY: power distribution

Next: DIFFERENT UTILIZATION VOLTAGES SINGLE AND THREE PHASE POWER

Allied Industrial Service Moves To Larger Quarters

TOLEDO—A move to new and enlarged quarters at 827 Hamilton St. by Allied Industrial Service Corp. has been announced by Robert Greenwald, president.

In the new location, the company will have approximately 6,000 sq. ft. of floor space, more than double its previous space. The company is engaged in the design and installation of air conditioning, refrigeration, ventilating, and heating systems for commercial and industrial buildings.

Enlarged quarters will enable the firm to expand its filter cleaning service and 24-hour service on all makes of air conditioning and refrigeration equipment.

Japan Using Sun's Radiation for Residential Heating

ATLANTIC CITY, N. J.— Japan is making substantial use of the sun's radiation for household heating, according to John I. Yellott, chairman of the solar energy applications committee of the American Society of Mechanical Engineers.

Speaking at the society's annual meeting here, the Phoenix, Ariz. consulting engineer said solar energy work was of immediate, practical importance for Japan because of a short supply of coal, oil, and natural gas.

Yellott said Japan has more than 200,000 solar water heaters in use to heat water during the day for evening baths—a traditional part of Japanese life. The simplest heaters in use there, he explained, are plastic envelopes with transparent tops and black bottoms. Other types have metallic collecting surfaces.

The speaker also reported that in an experimental house designed by a Japanese consulting engineer, a heat pump is employed to raise the temperature of sun-heated water to the point where it is warm enough to be used in a radiant heating system. A special aluminum roof surface is the heat collector.

Yellott said there are about 10,000 solar heaters in the U. S., mainly in Florida. Dr. Maria Telkes, a scientist now with Curtis-Wright Corp. in Plainsboro, N. J., is doing much of the U. S. research in this field.

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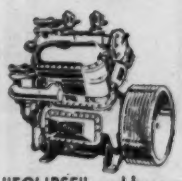

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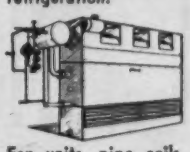

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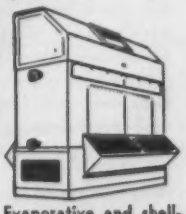

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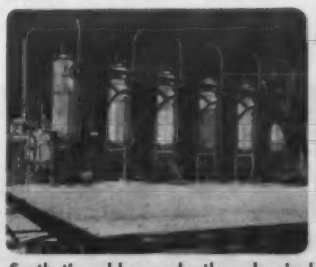

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You Asked About It

From the many requests for information it receives, the NEWS will select and publish some of general interest. In many instances, the answers will be supplied by authorities in the industry.

How Can I Air Condition Glass Enclosed Addition To Ranch Style Home?

Q. Perhaps you can make a recommendation on a problem that seems insurmountable to me—perhaps there's a simple solution. I have a customer who will buy the air conditioning system I can supply that will satisfy the exacting aesthetic tastes of his wife. His room, an addition to a ranch home, is a square made of glass from the ceiling to within 20 in. of the floor. A 7-ft. opening leads into the next room, the parlor. The architect made provision for two window units, but in such a location as to offer the least efficiency . . . smash on the floor on the inside wall. (I've enclosed a sketch showing elevation and plan view.)

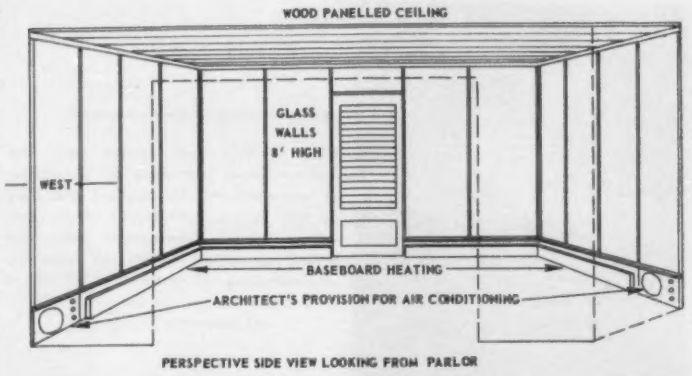
We've had to rule out a roof unit—doesn't want any holes in roof. We've ruled out the tall slim free-standing evaporator because of appearance. We know of no ceiling evaporators that lend themselves to their relatively low-ceilinged room. The only walls in the room are a small 1-ft.-wide section next to fireplace and a 6-ft. section into which a bar has been built. The upper section of that wall is unencumbered.

The B.t.u. output of this room is 30,000! My problem, Mr. Versagi, is—should I give up?

D.B.Q.—Westport, Conn.

The answer comes from Ralph Gonzalez, application engineer, Airtemp.

We are asked to consider various ways and means of air conditioning a glass enclosed addition to a ranch home. This is a square room having 8-ft. height of glass on the west, south, and east sides of the room. The glass starts 20 in. above the floor and we can assume the room dimensions to be in the order of 20 ft. by 20 ft., with slab on the ground and very little, if any, attic space in the roof construction. These assumptions are necessary because information on these points was not given in the letter of inquiry. However, the letter was accompanied by an excellent sketch and did advise that baseboard heating is available. It can also be assumed that the baseboard heating is either steam or circulating hot water.



SKETCH of glass-enclosed addition to ranch-style home to which air conditioning is to be added.

Although the correspondence is not clear on this point, many such sun rooms are equipped with sliding windows and screens so that large areas of the window walls can be opened to the outdoors. This increases the usage of the room to any non-sunny hours when it would be pleasant to be outdoors and has the additional advantages of bug and rain protection.

Room Problems In Winter

Now let's consider the owner's experience with the room in the extremes of weather. First, let's consider the winter-time with cold weather and a strong wind. The occupant not only radiates to the cold glass walls but also radiates through them to the cold out-of-doors. Also, unless the sliding doors are exceptionally tight, the desirable summer cross-ventilation effect reduces an outside winter gale to a frigid indoor breeze. It is likely to be a wind-break but not a wind-stop. The use of radiant baseboard heating will obviously increase the hours of use of the room to colder than pleasant weather, but it is not likely to make the room as comfortable as an "honest - to - goodness" house shelter in the coldest weather.

In fact, in the coldest weather, most sun porches resemble a refrigerator and most sun-porch owners are aware of the fact that this situation is an inevitable result of a design that is intended to be most pleasant at an entirely different weather condition.

In fact, most sun porch owners (when invited to do so in an objective frame of mind) are willing to agree that there is no justification in wanting to use in either extremes of weather, a room that was specifically designed only for pleasure in the mild weather.

Hot Weather Problems

Having conjured up a picture of the most inclement winter weather, let's consider the hot weather experience with the sun parlor. If we can agree that only the young sun-tan addicts find it pleasant to sit (all lotion-covered and masqueraded in dark sun glasses) in the hot sun, then there is no reason to expect the sun room to be pleasant in the hottest weather. Temperature consideration aside, few of us care to expose our diminishing eye strength to the glare of several hundred foot-candles of light for extended periods.

The owner of a sun room with glass walls on east, south, and west exposures is likely to conclude that he has just about accomplished the ultimate in constructing a solar furnace. Indeed, the room that he built for pleasure in cool sunny weather does become a solar furnace in mid-summer sunshine.

All day long, the heavy masonry of the floor will be soaking up the sun's heat and for hours after the sun is gone, the masonry will be giving back some of that stored heat. Opening up the sliding panels will help some, but it will not make the room habitable in the warmest sunny weather.

It is natural for the owner of such a room to seek engineering help.

Owner Should Recognize Limitations of Room

But we should not lead anyone to believe that they can economically revoke obvious natural physical processes. If you want to stay dry, you do not jump into a swimming pool; if you want to stay cool, you do not walk into a furnace—and as mentioned before, this glass-lined room on a hot sunny day is a solar furnace.

In the usual case, landscaping, and screening become the first order of extending the useful hours of this greenhouse room. Green screening on the east and west sides and a permanent or movable overhand on the south side should be provided to materially reduce or (preferably) eliminate the entry of direct sunlight into the room.

The addition of mechanical ventilation alone will of course aid in dissipating the sun heat at a greater rate. Likewise, any mechanical cooling that may be installed will pump out heat at the rate of the equipment capacity and will get the room temperature down to a habitable condition sooner, in addition to taking care of the humidity.

It should be noted that comfort need not be expected in direct sunlight with clear glass . . . nor is it likely that the owner will want to make the room habitable at the hottest daytime hours when he is given an opportunity to appreciate the extent of the problem and the costs that would be involved in its solution.

However, the room could be used on warm evenings if the cooling equipment were operated all day and occupancy occurred later in the evening after some of the accumulated daytime heat has been dissipated. The room air conditioners, if of an acceptable noise level and good air distribution characteristics, would help, particularly if of the 10,000 B.t.u.h. heat removal capacity.

4 Solutions Offered

Were this a new project, a very good way of distributing cooling air would be on a baseboard perimeter basis. The baseboard wet heat could be retained (and I would recommend it for the colder areas of our country) and installed on the room side of the air inlet arrangements. Since this is a slab-on-the-ground job, this method would be costly at this date even if the presence of a basement under the main house makes it feasible.

Another method of cooling air distribution would be through perimeter outlets in the ceiling, with the cool air being diffused through directional multivane outlets. The present attic and roof arrangements may also make this a costly and unfeasible method for this existing case.

While not as desirable from some standpoints, an effective job of summer cooling air distribution could be accomplished from high side wall outlets on the partition wall to the main house and the partition wall can be chased for short supply and return ducts.

A fourth (and strictly a compromise method) would be to distribute air from low baseboard grilles or floor grilles located at the partition wall. In addition to limiting furniture arrangements on the only solid wall of the room, the cooling air distribution from that point would have limited throw and from the naturally cooled part of the room.

This goes counter to the principle of distributing the cooling air in the same pattern as the heat load and would result in a temperature gradient across the room with the warmest areas near the south glass.

The access to such an outlet arrangement presupposes a basement under the main house and access to this area. Since basement recreation rooms are frequently located under the living room, this area is sometimes unavailable because of the recreation room.

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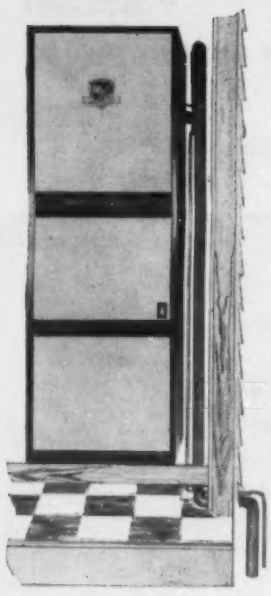

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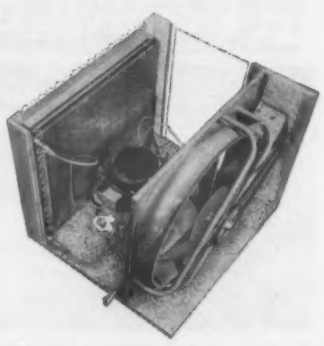

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Installation & Service Practices In Commercial Refrigeration

One of a group of discussions on several phases of the installation, operation, and servicing of commercial refrigeration equipment.

By Frank J. Versagi

Installation/Maintenance Responsibility (2)

One approach to obtaining proper installation has been for the manufacturer to have an engineer or serviceman on hand during installation of its equipment. There are disadvantages to this approach.

For one thing, it is obviously impossible for a manufacturer to have a man at all of the installations of his equipment.

For another, in many locations the union situation is such that the manufacturer's engineer cannot touch a tool on the job, but can only observe and recommend.

And again, some installers resent having the manufacturer's representative oversee their work. In most cases, it is unwise for the representative to point out to the customer that improper installation procedures are being used, since the contractor may use his influence in the future to run down or black list the manufacturer's equipment.

As mentioned elsewhere, supermarket people complain that too many times the manufacturer's man is not an engineer or serviceman, but a salesman "whose idea of being helpful is to suggest five or six coffee breaks a day."

In contrast, one Midwest chain approvingly reported the instance of a sales engineer arriving, in coveralls, with the shipment and staying with the installation from unloading to the test run.

Since the normal tendency of users is to blame the equipment when performance falls below expectations, it is in the manufacturer's interest to assure as proper an installation as possible—without jeopardizing his distributor's position or infringing on contractor's prerogatives.

Thus, the approach in which the manufacturer plans the entire store and specifies everything from plumbing to wiring. By supplying this detailed information to the customer, the manufacturer enables the operator to insist upon directly comparable bids, with all prices based on the use of the same materials and procedures. The contractor in such cases, for example, will contract to use exactly the line sizes specified, place the machinery, the fixtures, the outlets and drains exactly as specified by the manufacturer.

While the responsibility is still the contractor's, experience with this procedure has shown that the incidence of service problems is much lower than where such a procedure is not followed.

Some chains will not use these detailed plans of manufacturers because "We have engineers and construction people who are fully qualified to assure us proper layout details."

The ultimate step—now being experimented with—would hold the manufacturer ultimately responsible for installation and service. A distributor or contractor would still handle the actual installation, but he would be chosen and qualified by the manufacturer. And whereas the store planning services now offered by several producers is part of customer service, any contract which would make the manufacturer responsible for service and maintenance will have the cost for these items figured into the original cost of the job.

The very fact that such a step is being considered lends weight to the argument that installation procedures can make the difference between a chronic problem job and an installation profitable to the manufacturer, the installer, the store operator.

Air-cooled condensing, condensation, multiplexing, service problems are among the subjects to be discussed in future articles in this series. Typical reaction from manufacturers and contractors generated by previous articles will also be included.

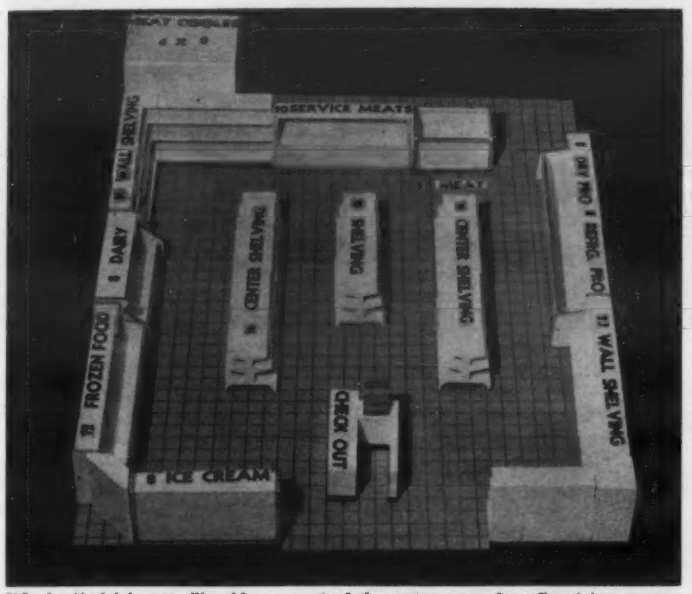

FIG. 1—Model layouts like this are part of the customer service offered by commercial refrigeration manufacturers to independent markets and to those chain markets who prefer not to do their own planning. With model cases placed, designations can be made for refrigerant lines, drain lines, and electrical connections.

☐ STORE OPEN
☐ STORE UNDER CONST. PRELIMINARY CHECK
☐ STORE UNDER CONST. FINAL CHECK

CASE DATA		MACHINE DATA						DEFROST			
Case Line & Serial No.	Length Per Machine	Cond. Unit Mod.	Comp Body No.	Oper. Hd. Pres.	Suction Press.	Cut In	Cut Out	Defrost Control Type	No. Per Day	Time Length or Reset	Fail Safe

ROOM TEMP. _____
RELATIVE HUMIDITY _____

	TEMPERATURES					REFRIGERATION LINES									DRAINS CK. COND.							
	Entering Air	Well or Prod	Return Duct	Avg. Spread	Sub Rail 1" Above	Suct. Line Size	Suct. Line Lgth	Liquid Line Size	Lines Run Through Case, Tile, Trench	Access Openings Sealed Yes	Access Openings Sealed No	Refrigerant Lines Insulated Yes	Refrigerant Lines Insulated No	Refrigerant Lines Insulated Need	Lgth. Size	Fall 1/4" Per Ft. OK	Fall 1/4" Per Ft. Poor	Contact Bed. Lines Yes	Contact Bed. Lines No	Trap OK	Trap Poor
Frozen Food																					
Ice Cream																					
Meat																					
Dairy																					
Produce																					
Other																					

WATER TREATMENT - BLEED OFF YES☐ NO☐ BLOW DOWN YES☐ NO☐
CHEMICAL TREATING YES☐ NO☐ HOW OFTEN
IS OVERALL APPEARANCE OF EQUIPMENT GOOD YES☐ NO☐
IF DAMAGE IS EVIDENT GIVE DETAILS UNDER REMARKS
IS OVERALL APPEARANCE OF INSTALLATION GOOD YES☐ NO☐
IF ANSWER IS NO GIVE DETAILS UNDER REMARKS

IS FACTORY AND INSTALLATION WIRING CORRECT YES☐ NO☐
IS DEFROST WIRING CORRECT YES☐ NO☐
GIVE SERIAL NUMBERS OF ANY CASES NEEDING PARTS OR CORRECTIONS

FIG. 2—This paste-up of a large tabular form used by Tyler Refrigeration Corp. shows the specific details considered in the design and maintenance of the fixtures and refrigeration systems in a supermarket.

recognize this?

Widely employed as a flow control device for all refrigerants, the solenoid valve permits flow control in response to an electric signal. Solenoid valves should be used where a temporary interruption of liquid flow is required, due to a load variation. With multiple systems, solenoid valves are employed to prevent the transfer of refrigerant from high temperature evaporators, or refrigerant condensation in the low temperature evaporator during an "off" cycle. They are also used as shutoff valves for pneumatic control systems, for heat pump reversing valves, and in brine systems to cut off the flow of brine to the coils.

here's another symbol you should know...

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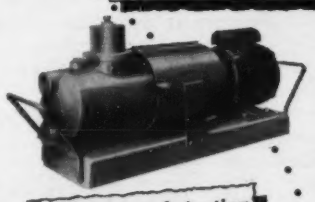

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Minimum Attention
Valves Eliminated

Beach-Russ Vacuum Pumps are also made in types and sizes for evacuation and testing of refrigeration equipment on a production basis.

BEACH-RUSS COMPANY
620C GRAYBAR BLDG., NEW YORK 17, N. Y.
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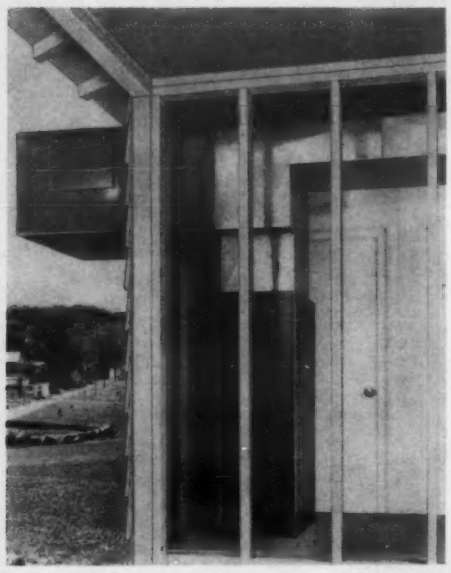
☐ Model A Two-Stage Pumps.
NAME.....
COMPANY.....
ADDRESS.....
CITY..... ZONE..... STATE.....
BEACH-RUSS CO.
620C GRAYBAR BLDG., NEW YORK 17, N. Y.

Furnace-Cooling Unit Connecting Device Cuts Installation Costs



THERMO-CENTER method of connecting heating and cooling units makes complete installation for less than $1,000 possible, claims Carrier Corp. Air flow from furnace in winter is discharged directly into duct leading off to right. In summer, cooling unit (l.) pulls air from furnace plenum and returns it to top of plenum from distribution throughout house.

CHICAGO—What is called a new cost-cutting method of installing year-round air conditioning in homes was introduced by Carrier Corp. at the National Association of Home Builders Show here in January.

Russell Gray, Carrier vice president and general manager of the Unitary Equipment Div., announced the development of a simplified furnace-cooling unit connecting device, produced in the factory.

The connection consists of a prefabricated metal sleeve which is installed in the wall near the furnace and a compact transition assembly which connects the furnace to the summer air conditioner.

The wall sleeve provides a close-fitting, strong support for a horizontal one-piece cooling unit which is suspended on the outside wall without benefit of knee braces. The transition assembly fits easily into the sleeve and controls the flow of air between the furnace and cooling apparatus.

"In winter, the furnace blower sends warm air directly into the duct system," it was pointed out. "In summer, the blower continues to operate and the cooling action is controlled by a thermostat setting. Air is drawn from the lower part of the furnace plenum, circulated over a cold coil in the cooling unit, and returned to the upper part of the plenum for distribution throughout the house.

"The same wall sleeve and transition assembly can be installed in frame of masonry construction and with downflow, upflow, or horizontal furnaces fired by gas or oil."

Using the Thermo-Center principle, a builder can also prepare a house for future air conditioning by locating the furnace close to an outside wall and sealing the wall sleeve temporarily, it was noted.

Gray claimed the new development will permit complete air conditioning of new homes for well under $1,000 including the heating plant. This figure could drop as low as $875 for builders in some areas, he said.

Gray called the Thermo-Center an efficient means of obtaining year-round air conditioning.

"By locating the cooling coil out of the main airstream, no fan horsepower is wasted pushing air through a non-operative coil in winter," he said. "In summer, when the cooling unit cycles off, there is no re-evaporation of condensed moisture off the coil and thus humidity remains at more even, comfortable levels."

Carrier furnaces used in the Thermo-Center have capacities from 56,000 B.t.u. output to 104,000 B.t.u. Cooling is provided up to 23,000 B.t.u.

Announcing its entry into the central residential heating field with a line of gas and oil-fired furnaces, Fedders Corp. also introduced a low-cost factory-charged "split" residential air conditioner. An 18-ft. length of flexible refrigerant lines runs between the coil section and the air-cooled condensing unit, which is designed for through-the-wall installation. (Complete details were in Jan. 25 NEWS).

Remote Gas Absorption Unit Shown

Although it won't be in full production until June, a new remote gas absorption unit that will deliver either chilled water or hot water for year-round use was featured by Arkla Air Conditioning Corp. The direct-fired Arkla-Servel Model 500C is rated at 42,000 B.t.u. on cooling, 96,000 B.t.u. on heating.

The unit produces 45° F. water for cooling, 170° water for heating, the water being circulated to either a central fan-coil-filter assembly for ductwork application or to individual room size fan-coil filter units.

The remote unit is water-cooled with an evaporative condenser being provided as an integral part of the package, as are the water circulating pump and expansion tank. The later can be removed, however, for installation at the high point of the system.

Exhibit Three New Heat Pumps

Entry into the manufacture of air-to-air heat pumps was indicated by three exhibitors—American-Standard, Delco Appliance, and Mueller Climatrol.

Scheduled to be available within the next two months, the American-Standard heat pump will be offered as a self-contained model in 2, 3, and 4-hp. sizes, and as a split system in the 5-hp. size.

The Delco Appliance heat pump will also be a self-contained design in 2, 3, 4, and 5-hp. sizes. It is expected to be available this spring, but will be distributed only through "fully qualified" dealers, a company spokesman explained.

Mueller Climatrol's new heat pump is a remote system available in 3 and 5-hp. models. The indoor coil and air-handling unit can be installed with or without a duct system. Intended for use with these heat pumps, supplementary electric resistance packages in 8 and 12 kw. capacities are also available.

Central type electric heat furnaces were also introduced at the show by American-Standard, Mueller Climatrol, and Stewart-Warner, while York Div. of Borg-Warner Corp. featured its new duct-type electric resistance heaters for use with central air conditioning.

(Details of the Mueller Climatrol and York electric heat units were described in the Jan. 18 NEWS.)

Two sizes of electric furnaces in both upflow and downflow models comprise the American-Standard line. Heating capacity of both sizes is the same (82,000 B.t.u. maximum), but the larger unit has a larger blower and motor to meet greater cooling needs when applied in a year-round system.

These furnaces are shipped factory-wired for 82,000 B.t.u., but lower capacities—41,000 and 61,500 B.t.u.—can be obtained in the field by "simple rearrangement of electrical connections inside the furnace,"

(Concluded on Back Page, Col. 1)

Builders Show--

(Concluded from Page 1, Col. 3)

siderable attention, too, but exhibitors were wondering if this was due to the heat pump itself or reaction to widespread utility promotion of electric heat.

There was a general feeling among exhibitors, however, that home builders are becoming more conscious of the desirability of providing year-round comfort through the use of air conditioning and better quality heating systems.

Westinghouse, for example, says its announcement of 1960 plans for a $3,000,000 program to promote the "total electric home" concept was enthusiastically received by hundreds of builders at luncheons here Jan. 18 and 19. The program was originally introduced last year at an expense of $2,500,000.

Complete plans for 16 different houses prepared by five architects are offered to builders in the 1960 Westinghouse program. Although baseboard electric heat units are incorporated in some plans, Westinghouse explains that "for those interested in the ultimate in year-round residential comfort, the heat pump offers both summer cooling and winter heating from the same central unit."

A number of new products were displayed for the first time in conjunction with the exposition, which was divided between three locations: the Conrad Hilton and Sherman hotels, and the Chicago Coliseum. The show ran Jan. 17 through 21.

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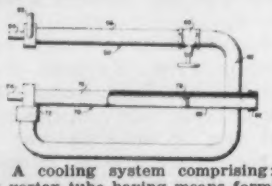
PATENTS

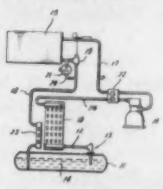
Week of Sept. 22

2,904,965. VORTEX TUBE WITH FLOW CONTROL MEANS. Frederick H. Green, Palos Verdes Estates, Calif., assignor to The Garrett Corp., Los Angeles, Calif.



5. A cooling system comprising: a first vortex tube having means forming hot and cold fluid outlets, a first flow restricting means mounted in said hot fluid outlet; conduit means connecting said hot fluid outlet to the inlet of a second vortex tube; said second vortex tube having means forming a hot tube and a cold fluid outlet; a second flow restricting means mounted in one end of the hot tube of said second vortex tube. . . .

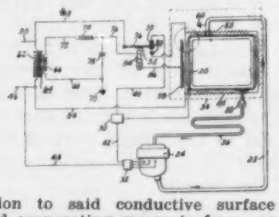
2,904,967. REFRIGERATION SYSTEM APPARATUS HAVING A HEATING CYCLE AND A COOLING CYCLE AND METHOD OF CONTROLLING THE HEATING CYCLE. Ray M. Henderson, El Reno, Okla.



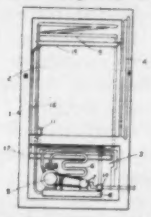
1. In a compression refrigeration system of the type employing a receiver for storing liquid refrigerant and having a cooling cycle and a heating cycle in each of which liquid refrigerant is fed from the receiver into an evaporator together with means for switching cycles, the improvement which resides in the combination therewith of a conduit extending into the receiver and providing an outlet for the receiver through which refrigerant is fed to the evaporator downstream thereof during the heating cycle. . . .

2,904,968. EVAPORATOR DEFROSTING MEANS. Jessie H. Spencer, Jr., Germantown, Ohio, assignor to General Motors Corp., Detroit, Mich.

1. In refrigerating apparatus including refrigerant evaporating means having an electrically conductive surface and refrigerant liquefying means operatively connected to said evaporating means, means associated an electrical conductor plate in spaced relation to said conductive surface of said evaporating means to form capacitor means, and electrical means responsive to a change in capacitance of said capacitor means for initiating a defrosting cycle of said evaporating means.

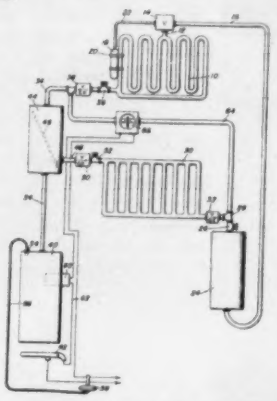


2,904,970. REFRIGERATOR DRIP WATER DISPOSAL MEANS. Chester C. Fisher, Los Angeles, Calif.



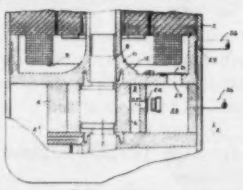
8. In a refrigerator apparatus having a compartment to be kept cool and cooling means for cooling said compartment, drip water disposal means comprising a container open to the atmosphere positioned outside of said compartment; means for conveying the drip water from said cooling means to said container; means including a blower and air directing means for directing air from the atmosphere continuously across the surface of the drip water in said container. . . .

2,904,969. CYCLIC REFRIGERATION SYSTEM. Henry Reamer, Silver Lake, Wis.



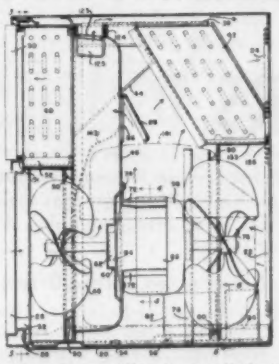
1. A cyclic refrigeration system comprising a liquid refrigerant receiver tank, an evaporator, a connecting line between the tank and evaporator, an expansion valve in said connecting line, means for expanding and heating the gaseous refrigerant discharge from the evaporator, a discharge line extending between the evaporator and the expanding and heating means, a check valve in said discharge line permitting flow from the evaporator to the expanding and heating means, a condenser. . . .

2,904,971. SUPERHEAT COIL BYPASS IN REFRIGERATING APPARATUS. Milton M. Kosfeld, Louisville, Ky., assignor to General Electric Co., a corporation of New York.



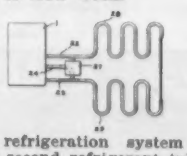
1. In a refrigerating system, the combination comprising a hermetically sealed casing for containing a high pressure refrigerant gas, a compressor and a compressor motor mounted in said casing, a discharge chamber directly connected to the outlet of said compressor, a superheat removal coil having its inlet communicating with said discharge chamber. . . .

2,904,972. ROOM CONDITIONER. Jacob Smilack, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



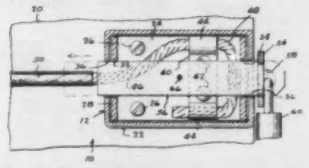
4. An air conditioning unit including a cabinet having a room air inlet below and a room air outlet above on one side and an outdoor air inlet below and an outdoor air outlet on the opposite side, an evaporator in series with said room air outlet, a condenser in series with said outdoor air outlet, a generally vertical shallow pan shaped partition wall separating the evaporator and the room air inlet and outlet from said condenser and said outdoor air inlet and outlet and providing an air passage from the room air inlet to the inner face of the evaporator. . . .

2,904,973. VARIABLE DISPLACEMENT ROTARY COMPRESSOR. Milton M. Kosfeld, Louisville, Ky., assignor to General Electric Co., a corporation of New York.



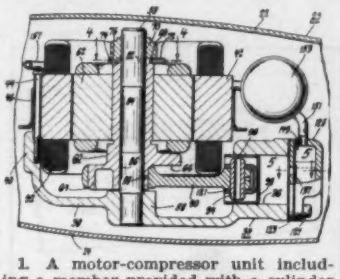
In a refrigeration system having first and second refrigerant tubes; the combination comprising a rotary refrigerant compressor and a reversing valve for reversing the direction of flow of refrigerant from said compressor through said first and second refrigerant tubes, said compressor including a cylinder having a chamber and a radial slot communicating with said chamber, a rotor eccentrically rotatable within said chamber. . . .

2,904,986. SAFETY LOCK FOR REFRIGERATORS AND THE LIKE. Robert A. Anderson, Mountain View, Alaska.



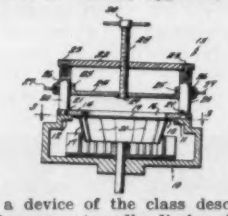
1. A device to prevent unauthorized opening of a container comprising: a backing plate adapted for fixed connection to said container and having end openings; a flexible element secured at one end to said backing plate and adapted to encircle said container; a locking bar extending through said openings and having an abutment at one end limiting the locking bar against longitudinal movement in one direction. . . .

2,905,372. MOTOR COMPRESSOR UNIT. Frank E. La Flame, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



1. A motor-compressor unit including a member provided with a cylinder and a stator mounting portion, a motor stator mounted upon said stator mounting portion, a stationary shaft having one end cantilever mounted in said member and being otherwise free of support, a hollow shaft rotatably mounted upon said stationary shaft and having an eccentric portion thereon, a piston within said cylinder. . . .

2,905,375. AIR MIXING AND FLOW CONTROL DEVICE. John Hanus and Sylvester N. Parker, Appleton, Wis.

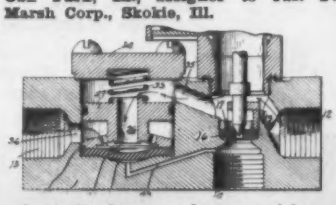


In a device of the class described a housing, an outwardly discharging centrally open fan journalled in said housing, a base plate detachably secured to said housing, said base plate arranged perpendicularly to the axis of said fan and having an axial inlet port, a frusto-conical nozzle disposed on one side of said plate, said nozzle projecting into the open center of said fan and terminating intermediate the opposite sides of said fan. . . .

2,905,376. LIGHT METAL VANE FOR ROTARY COMPRESSOR. Paul H. Davey, Kent, Ohio, assignor of one-third to Paul H. Davey, Jr., and one-third to Joseph T. Myers.

1. A vane for sealing between the rotor and the stator of a rotary compressor comprising a solid body of metal of low density and high heat conducting capacity, a thin abrasion-resisting coating covering said body and bonded thereto, and an outside thin smooth coating of self-lubricating material substantially bonded to said abrasion-resisting coating.

2,905,431. VALVE. Richard H. Gilbert, Oak Park, Ill., assignor to Jas. P. Marsh Corp., Skokie, Ill.



6. A diaphragm valve comprising a body having a chamber therein, a flexible diaphragm at the inner end of said

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SERVICE AND installation mechanic 20 years' experience. With last employer 10 years. Wishes to relocate with company that can offer year around work. Can handle refrigeration, heating and air conditioning. BOX A6454, Air Conditioning, Heating & Refrigeration News.

POSITIONS AVAILABLE

METROPOLITAN NEW York wholesaler of refrigeration, air conditioning, heating equipment and supplies needs an experienced parts and equipment man for counter and outside sales. Opportunity with progressive organization for the right man. Write in detail your experience, past or present employment. Financial arrangements will be discussed in interview. THE CAPSON CO., INC., 737 Bergen Street, Brooklyn 38, N. Y.

ICE VENDING stations, icemakers, drinkmakers. Several territories available to experienced agents with proven record for establishing and giving sales training to commercial refrigeration distributors. Our complete sales program will require a major portion your time. Telephone DANSBY A. COUNCIL, Sunset 20314, Fort Smith, Arkansas.

ASSISTANT MANAGER, Export Department. Requirements include: technical background; experience with air conditioning, refrigeration and heating products; knowledge of export operations. Opportunity unlimited with rapidly expanding export department of industry's leading multi-line manufacturer. Send complete resume to DUNHAM-BUSH, INC., 179 South St., West Hartford, Conn.

MANUFACTURER'S REPRESENTATIVE for commercial refrigerators and food market equipment. Expanded line of fast moving models offers good opportunity in newly created territories to handle increasing sales activity in: south eastern states, Texas area, St. Louis area and a few other territories. Reply directly, FOGEL REFRIGERATOR COMPANY, Philadelphia 37, Pennsylvania.

MANUFACTURERS REPRESENTATIVES and distributors to sell air conditioning and refrigeration jobbers and dealers. Complete line of quick scale removing materials and water treating chemicals. Lowest delivered prices in the industry. New polyethylene packages. Proven line. RATHBUN COMPANY, P. O. Box 5291, Houston 12, Texas.

SALES ENGINEER for air conditioning contractor. Must be thoroughly experienced in design and estimating large built-up systems. Salary and bonus commensurate with work, background and ability. Opportunity for real future advancement. Send complete resume: TUCKER CO., 400 Ann St., Hartford, Conn. Confidential interview arranged.

ENGINEER IN recently formed Research and Development section of established company. We need an alert, independent-thinking person to work on new and improved concepts of heating, cooling and combustion. Engineering degree required. Prefer one to three years' experience. Midwest location. Send resume and salary requirements to BOX A6440, Air Conditioning Heating & Refrigeration News. Our employees know of this opening.

MANUFACTURERS' REPRESENTATIVES for nationally accepted line of commercial roof-mounted heating and cooling units for Arkansas, North Carolina, Virginia, West Virginia, greater Pittsburgh, New Mexico, Arizona, Utah, Nevada, and west Texas. Write: BOX A6443, Air Conditioning, Heating & Refrigeration News.

HEAD OF test—must be experienced, able to organize test lab., make set ups, run and documented tests to Underwriters Lab., and C.S.A. on switches and controls. Need not be college graduate, if otherwise qualified. Salary commensurate with experience. South Florida location. Send resume: BOX A6444, Air Conditioning, Heating & Refrigeration News.

DISTRICT SUPERVISORS for areas with headquarters in Louisville, Ky., Memphis, Tenn., Birmingham, Ala., and Atlanta, Ga., by manufacturer of commercial refrigerators. Preferably the men we want are now selling to food market chains, supermarkets, wholesale grocers, refrigeration distributors or working for a manufacturer. They should be desirous of improving their positions by locating elsewhere or just anxious to cash in on experience and make more money for themselves. If you are one of them, send brief resume of experience to BOX A6450, Air Conditioning, Heating & Refrigeration News.

A MANUFACTURER of heating and cooling with triple A rating is interested in obtaining services of capable engineer with background of blower manufacturing. Our people know of this ad. Replies held confidential. BOX A6455, Air Conditioning, Heating & Refrigeration News.

REPRESENTATIVE FOR Louisiana, Mississippi, Arkansas and Memphis, Tenn. area to call on restaurant supply houses and refrigeration dealers with a nationally advertised line of refrigeration equipment that sells to both type outlets, (no super market equipment). Please give full information in first letter. BOX A6456, Air Conditioning, Heating & Refrigeration News.

WANTED: ALIVE!!!! For: Hard work. Reward: Excellent commissions. Manufacturer's representatives . . . by nationally known manufacturer with 50 years' experience manufacturing commercial refrigeration, air conditioning and heating coils selling to wholesalers and OEM accounts, etc. Territories open are Ohio, Indiana, Kentucky, and Tennessee. Also Kansas, Oklahoma, Missouri, Nebraska, and Iowa. Send details and experience of territory covered. BOX A6457, Air Conditioning, Heating & Refrigeration News.

HIGHLY QUALIFIED man with over 15 years' experience in sales, business, engineering, marketing, administration in air conditioning and refrigeration desires working and financial association with reputable manufacturer, distributor or contractor in N.Y.C. general area. 35 years, married, energetic; M.S., B.S. and general business education. BOX A6458, Air Conditioning, Heating & Refrigeration News.

EQUIPMENT FOR SALE

CHILLED AND hot water or direct expansion extended surface coils: 5 T.-4R—4 sq.ft. face area $117.00; 7.5 T.-4R—6 sq.ft. face area $149.00; 10 T.-4R—8 sq.ft. face area $181.00; 15 T.-4R—12 sq.ft. face area $245.00; 20 T.-4R—16 sq.ft. face area $310.00; 25 T.-4R—20 sq.ft. face area $375.00; 30 T.-4R—24 sq.ft. face area $440.00; Capacity based upon 45°R.T. & 67°E.A. w.b. 500 fpm coil face velocity. Wire * write * call for quotations for any coil requirements, ARCTICAIRE MFG. CO., 2201 Grand Ave., Tel. BA. 1-7055, Kansas City 8, Mo.

DEALERS, DISTRIBUTORS, agents—Remote air cooled - air conditioning. Heat pumps that defrost without reversing without loss of efficiency (patent applied for). High quality, competitive pricing. Some territory in North, East, and far West open—dealers anywhere. NATIONAL THERMATIC CORPORATION, Division of JOHN FELTER COMPANY, P. O. Box 7464, Houston, Texas.

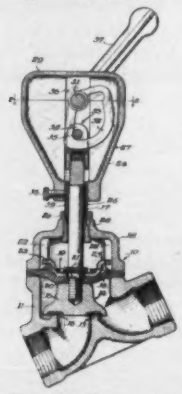
BUSINESS OPPORTUNITIES

COMMERCIAL REFRIGERATION, heating and air conditioning sales and service business. Major lines. 16 years in territory. Located in the Midwest. Large warehouse includes shop and office. $6,000.00 approx. inventory; $12,000.00 complete. Home optional, $9,000.00. Walk into established business. $15,000.00 down, balance 6% BOX A6451, Air Conditioning, Heating & Refrigeration News.

EASTERN AIR conditioning and heating equipment manufacturer has immediate openings for district managers in New England, Southeast, Central and Western areas. Complete line. If you are experienced and have a following in air conditioning and heating commercial and residential markets, you can qualify to join our aggressive, revitalized sales team. Send resume to BOX A6459, Air Conditioning, Heating & Refrigeration News.

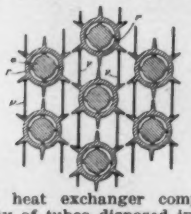
chamber, a spool having a longitudinal opening therethrough and a peripheral flange at its inner end positioned in said chamber. . . .

2,905,433. ADJUSTABLE VALVE ACTUATION MEANS. Robert A. Till and Ivan J. Acosta, Chicago, Ill., assignors to Crane Co., Chicago, Ill.



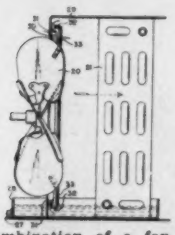
1. A valve structure comprising a valve casing, a valve seat in said casing, a tubular threaded extension on the casing axially aligned with the seat, a longitudinally reciprocable valve stem projecting from the casing guided in said extension. . . .

2,905,447. TUBULAR HEAT-EXCHANGER. Andre Huet, Paris, France.



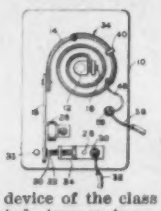
5. A heat exchanger comprising a plurality of tubes disposed in substantially parallel relationship, each tube being provided with a plurality of radially-extending fins, at least some of said fins of each tube being of undulate form longitudinally of said tube, and at least some of said fins of each tube being rectilinear longitudinally of said tube, whereby each tube has both rectilinear and undulated fins. . . .

2,905,454. AIR CONDITIONING APPARATUS. George W. Wood, West Springfield, Mass., assignor to Westinghouse Electric Corp., East Pittsburgh, Pa.



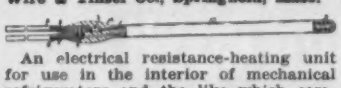
The combination of a fan rotatable on a substantially horizontal axis and adapted to propel air axially therethrough, a sump, a slinger ring secured to said fan for rotation therewith, said ring having a portion thereof extending into said sump, whereby said ring lifts liquid from the sump, said slinger ring. . . .

2,905,790. SPACE THERMOSTAT WITH ADJUSTABLE ANTICIPATOR. Charles E. Markham, Affton, Mo., assignor to White-Rodgers Co., St. Louis, Mo.



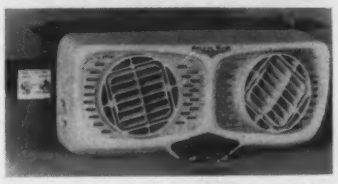
1. In a device of the class described, an elongated temperature responsive element, and means for variably heating said element electrically comprising a pair of elongated flexible electrical conductors lying against said element and coextending in spaced parallel relationship along said element, said conductor being mechanically connected at both ends to element. . . .

2,905,918. HEATING UNIT FOR MECHANICAL REFRIGERATORS AND THE LIKE. Victor K. Wagner, Jr., Suffield, Conn., assignor to Springfield Wire & Tinsel Co., Springfield, Mass.



An electrical resistance-heating unit for use in the interior of mechanical refrigerators and the like which comprises a flexible continuous resistance strand having a glass fibre core impregnated with a silicone resin about which is wound a spiral coil of resistance wire, said strand being arranged in a parallel arm loop formation. . . .

Heat Unit and Accessories Available 'To Convert Artic-Kar Units Into Heat Pumps'



ARTIC-KAR auto air conditioner can now be "converted into a heat pump" with a heating unit and accessories which the firm has recently introduced.

DALLAS—Development of a heat unit and accessories "to convert 'Artic-Kar' automobile air conditioners into true heat pumps" has been announced by Capitol Refrigeration, Inc.

The Dallas firm markets auto air conditioners under the Artic-Kar trade name.

"All dash-mounted Artic-Kars for U.S. or foreign cars can be converted into true heat pumps," the announcement said. "For U.S. cars, the firm markets two basic models of air conditioners and heat pumps that are known as the 'Iceberg' and 'Sno-Cap' models.

"Retail price of the air conditioners converted into heat pumps are only about 16% more than the original cost of the air conditioner installed. This amounts to a substantial saving compared to buying both a heater and air conditioner, or other heating-cooling methods.

"The heat pump conversion kit includes flexible ducts and necessary connections for defrosters for all makes of automobiles.

"The conversion installation time is 20 to 30 minutes; the basic air conditioner can be installed in two to three hours time.

"In the Iceberg dual-fan model, the rate of air flow is 320 c.f.m., or enough to furnish a complete pure air change 10 times-per-minute or more in the average car. Artic-Kar's heat pumps have reversible fans to divert cold or hot air away from passengers to circulate more freely around interior of cars.

"Fans also have opposite rotation to provide higher evaporative coil coverage."

Both models are styled to complement the decor of an automobile, it was stated. The Iceberg model is black or white with louvers and emblem finished in gold trim. Louvers not only rotate 360° but also tilt backwards and forwards 20° for complete directional air flow control.

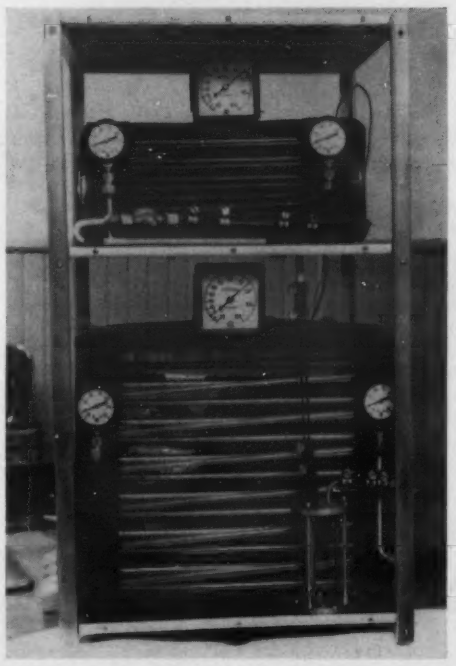
Artic-Kar dash-mounted models are 6 in. high by 15 in. long by 10½ in. deep. Cases weigh 15 lbs. and can be rigidly mounted without interfering with passengers, the company said.

Heat pumps and air conditioners have automatic thermostat control. There are three air speeds: high, medium, and low.

A magnetic clutch, also automatically controlled by thermostat setting, eliminates running the compressor when not necessary. A pilot light shows when Artic-Kar is refrigerating, when it isn't.

Artic-Kar heat pumps have been field-tested in actual use for two years, and carry a 90-day warranty, it was stated.

Trunk-mounted air conditioners are also available for all makes and models.



PARKOMAT's glass auto air conditioner will make a nationwide tour and will be used in service clinics and viewed by the public.

Parkomat Glass Auto Air Conditioner Demonstrator To Make Nationwide Tour

DALLAS — Parkomat Sales Co., Inc. here has announced plans for a nationwide showing of its glass air conditioner demonstrator in many cities throughout the U. S.

Distributors in the various cities will show the visual aid demonstrator to the public, as well as use it in conjunction with service clinics to be conducted in each city.

John Sensenig, Jr., author of the book, "Auto Air Conditioning for Auto Mechanics," will accompany the demonstrator and will conduct the clinics which will be open to all mechanics interested in automobile air conditioning.

This is part of a nationwide assistance and service program being offered to dealers and mechanics during 1960 by Parkomat Sales, according to the announcement.

Mechanics and others desiring information and dates of the arrival of the clinic in their area should write to Parkomat Sales Co., Inc., 200 S. Akard St., Dallas 15.

Trying to find the right man for a hard-to-fill vacancy—the NEWS' Classified Ads are read by your man.

Place your ad today!

MITCHELL Mark IV Monitor auto air conditioner for 1960 is said to offer colder discharge temperatures and quieter operation.

Colder Discharge Air, Quieter Operation Said To Be Features of 1960 Mark IV Monitor

DALLAS—Details on the new 1960 "Mark IV Monitor" have been announced by the John E. Mitchell Co., manufacturer of Mark IV automobile air conditioners.

While the basic engineering remains unchanged, certain refinements assure improved performance for the new model, it was stated. Discharge air temperatures will average four to five degrees colder, according to Donald F. Mitchell, vice president for sales.

Mitchell also pointed out that while squirrel-cage blowers with their inherently low noise level have been used in the Mark IV Monitor since 1958, the 1960 model will have an even quieter operation. Exclusive Monitor "beacon" temperature indicator and patented "Selectrol" refrigerant control, eliminating clutch cycling, have both been retained in the 1960 model, it was pointed out.

The Monitor evaporator case, which fits under the dash, has been redesigned and streamlined with particular emphasis on appearance in 1959 and 1960 model cars.

Chrome trim, chrome turret mounts for air volume and temperature control and metallic plated implex outlet louvers are all designed to enhance the beauty of the case in two-tone charcoal gray, Mitchell said.

Announce Air Conditioner For Hillman Minx Cars

NEW YORK CITY—Envisioning fleets of small cars for company use in the South, Rootes Motors, Inc., has introduced a $299 air conditioning system for its new Hillman Minx cars, it was reported here.

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"SERVICING AUTOMOBILE AIR CONDITIONERS"

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NAME.....
COMPANY.....
STREET.....
CITY.....ZONE.....STATE.....
2-1-60

Builders View New Cooling Units--

(Concluded from Page 53, Col. 5)

the company states.

The new Stewart-Warner electric furnaces, designed for easy adaptation of air conditioning, are available in four sizes and in vertical, counterflow, and horizontal models. Maximum capacities of the four sizes are listed at 30,735, 51,225, 71,715, and 92,205 B.t.u., respectively.

Special feature of the line is the built-in "Selectra-Sequencer" which provides motor-operated modulation of the heat output through several stages in response to demands of the thermostat. The device is claimed to bring "truly optimum indoor comfort to homeowners at reduced cost."

Electric heat in the form of baseboard, panel, and/or imbedded wire was also exhibited by several other manufacturers, including such firms as Arvin, Cavalier, Coolerator Div., Electromode, General Electric, Hunter Div., International Oil Burner, Markel, Sun-Tran, Thermador, Thermway, and Westinghouse.

In addition to those already mentioned, there were a few new air conditioning products should by exhibitors.

Rheem Bows 'Corsaire'

Rheem Mfg. Co. displayed models of its new "Corsaire" air-cooled air conditioner line which will be produced in both self-contained and split-system designs. The remote system will be available in four nominal sizes of 2, 3, 4, and 5 hp. There will be two sizes of the self-contained model: 2 and 3 hp.

C. A. Olsen featured a redesigned 2-hp. remote condensing unit employing a propellor type fan claimed to provide quieter operation. It was also announced that Olsen will add a similar 4-hp. remote unit to its Luxaire and Moncrief lines soon. In addition, the company said it is now producing its blower-coil units (2, 3, 4, and 5 tons) in a design permitting their installation for either horizontal or vertical discharge.

Various other exhibitors were featuring packaged air conditioning equipment for central or room application, all of which had been on the market for at least some time.

There was also some new heating equipment besides that already noted on display.

Carrier was attracting attention with a new gas-fired 80,000 B.t.u. furnace intended for use with a 2-ton air conditioner.

A new "built-in" oil-fired wall or closed type furnace of 65,000 B.t.u. capacity was being featured by Heil-Quaker, but the major talking point of this exhibitor was its newly-devised air conditioning promotion plan.

Heil-Quaker Fan Offer

With the sale of one of its furnaces, a Heil-Quaker dealer can "give" the customer a window exhaust fan normally listing at $59.50 (dealer cost $13) with the offer to buy the fan back within five years at a price of $49.50 when the customer orders central air conditioning.

Participating dealers are required to purchase a minimum of 2,000 four-color direct mail pieces (at $7.50 per 1,000) which are mailed to the dealer-supplied list by Heil-Quaker, not so much as to control the mailing but to see that it's actually done. The dealers pays another $25 to cover mailing charges.

Spotlight in the Iron Fireman booth was its new Custom Mark II oil-fired hot water boiler available in two models rated at 110,000 and 145,000 B.t.u. capacity, respectively. The Mark II employs the induced draft "VoluMetric" fuel-air injection system, first introduced on a warm air furnace, which is claimed to eliminate smoke and soot, reduce fuel consumption, avoid chimney draft problems, and end nine out of 10 service calls.

Mor-Sun Div. of Morrison Steel Products featured its new "breakaway" design of gas and oil-fired lo-boy warm air furnaces. Rear section of the furnace, housing the blower and filter, can be unscrewed and then re-attached to simplify getting the furnace through small doorways, etc.

A new line of compact gas-fired furnaces which, with the exception of the smallest, are engineered for use with year-round air conditioning, was shown by Mueller Climatrol along with an improved deluxe line of gas and oil-fired furnaces. The Type 144/145 compact units are 57 in. high, 25$\frac{3}{16}$ in. deep, and in widths of 14$\frac{1}{2}$, 18, or 24 in.

Optional features available for the Mueller Climatrol deluxe line include an electronic air cleaner, clogged filter indicator, summer cooling, and an electric vaporizing type humidifier.

New Furnace for Builders

Also new at the exposition were Williamson's builder model gas and oil-fired furnaces available in counterflow and hi-boy designs. Two sizes for gas units in both styles are included (60,000 and 80,000 B.t.u. outputs), but both styles of the oil-fired model are rated at 84,000 B.t.u. output.

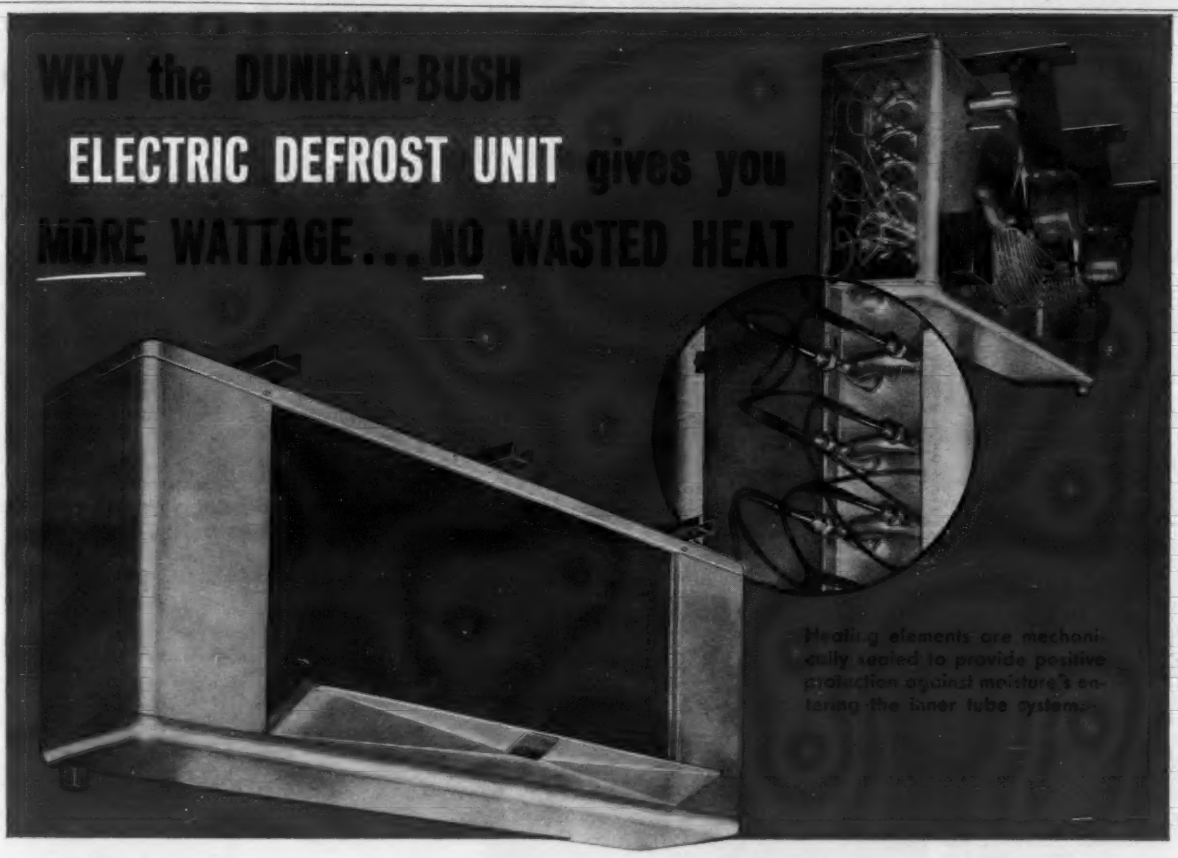
Building attention at the show was likewise attracted by a few specialty items related to the field. Carrier's recently announced automatic air purifier (see Dec. 14 NEWS), which controls humidity, quality, and purity of indoor air, is a case in point, as was Lau Blower's "Centrl-Vent" ventilating system design to exhaust air from as many as four areas, such as the range hood, bathroom, utility room, and kitchen, and Minneapolis-Honeywell's "Weather Center" control panel featured in the booths of several of the exhibiting manufacturers though sometimes under private brand name.

Dynamics Corp. Acquires Control of Anemostat

NEW YORK CITY—Dynamics Corp. of America announced that it has acquired majority control of Anemostat Corp. of America, producer of air diffusing other air conditioning system equipment, through purchase of 51% of the outstanding Anemostat common stock.

DCA previously had owned about 33% of Anemostat common. It now owns 84%, or 127,031 shares, of Anemostat's 151,000 outstanding shares.

Raymond F. Kelley, Dynamics Corp. president, said Anemostat will be operated as a subsidiary. For 1958, Anemostat reported sales of $4,383,640 and earnings equal to 59 cents a share. The firm's sales and earnings will be consolidated into Dynamic's corporate figures, it was reported.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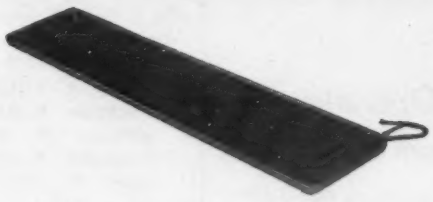
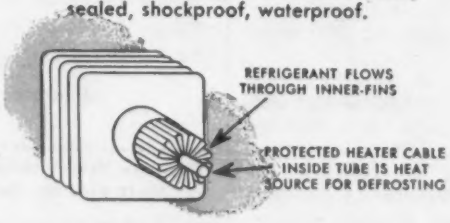
ELECTRIC DEFROST UNIT gives you
MORE WATTAGE...NO WASTED HEAT
Heating elements are mechanically sealed to provide positive protection against moisture's entering the liner tube system.



Rubber, electrical resistive heating pad in drain pan delivers quick, safe heat that prevents refreezing of water during defrosting. Pad is hermetically sealed, shockproof, waterproof.



Precisely because of its Inner-Fin coil construction—a feature offered only by Dunham-Bush—the 'ED' low temperature unit provides more wattage than competitive units, and *wastes no heat at all!*

Total heater wattage in 'ED' models ranges from 1900 to 10,900. Inner-Fin permits defrosting from *the inside*. And the increased surface that results from compact Inner-Fin construction ensures more rapid heat distribution, for faster defrosting with minimal room temperature rise.

Like all other Dunham-Bush products, the 'ED' is composed of equipment engineered for lasting, efficient performance. For example, its evaporator unit has copper-sheathed electric heating elements . . . heavy-duty motors with low temperature capability . . . drain pan electric heating pad . . . and an internally mounted superheater allowing full utilization of the evaporator surface.

The standard 'ED' system is capable of low temperature applications ranging from—40°F to 30°F, and can use either R-12 or R-22 refrigerant. Special systems (requiring factory selection) are available for temperatures as low as —80°F. Companion EDA systems, which use direct expansion ammonia refrigerant, are also available. Write for further information.

Dunham-Bush, Inc.

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